Contents for November 1961

Forecast of Government Farm Strategy.....The Wall Street Journal 1
Grandpa's Day Is Past!.....Western Crops and Farm Management 7
How Farmers Can Win Friends.....Farm Journal 13
Cutting Costs and Increasing Dairy Profits Guernsey Breeders' Journal 17
How To Choose Your Least Cost Feeding Ration.....Better Farming 22
Changing Patterns In Beef Production.....Prairie Farmer 27
Ewes Are Lazy Breeders.....Farmer & Stock Breeder 32
Factors Affecting Growth of Spring Lambs* Arkansas Experiment Sta. 34
Hottest Hog Issue In Years.....The Progressive Farmer 35
Corn Yields Jump 11% Over 1960 Levels*..Farmer's Outlook Letter 36
What's Ahead In Crop Production Equipment?.....Crops and Soils 37
Planting Good Seed Pays*.....Grain Improvement Notes 40
Depreciation Can Bankrupt You.....Successful Farming 41
New Book: "Physiology of Reprod. & Artificial Breeding of Cattle"* 43
Checklist To Check Your Farm Management..National Future Farmer 44
"Corn Is My Cheapest Feed".....Massey-Ferguson Farm Profit 47
Fun On The Farm.....Collected 50
Keep Dairy Records, It Pays*.....Royster's 1961 Almanac 54
Alfalfa Still Is Queen.....American Livestock Journal 55
Expensive Manure*.....Pennsylvania Farmer 56
Farmers Must Learn To Pool Selling Power.....Farm Bureau Mirror 57
Worms and Diarrhea Gang Up On Pigs* What's New In Farm Science 60
Roundup of Swine Certification Standards.....National Hog Farmer 61
Guide To Good Eggmanship.....The Country Guide 66
How To Adjust Calf Weaning Weights*.....University of Missouri 68
Bee Farming.....Journal of Agriculture of Western Australia 69
Health Tips For Feeder Cattle*.....University of Illinois 72
Chimney Smoke.....Irene Rudie 73
Sheep Breeding Test Results Announced*.....Virginia Extension 74
How To Figure Shrinkage In Cattle.....Checkerboard Service 75
Tractor Talk.....Bob Bargert 77
New Free Book: "Cut the Costs That Cut Your Farm Profits"*..... 78
A New Yardstick for Beef - Dual Grading..Livestock Breeder Journal 79
Your Protein and Profits In The Dung Heap?..The Livestock Feeder 83
New Corn To Foil Blackbirds*.....The Furrow 86
Are Your Dairy Herd Improvement Tools Sharp?...Hoard's Dairyman 87
Tractors Change Story of U.S. Farming*.....New Mexico News 90
Plastic-Coated Fertilizer?.....What's New In Farm Science 91
How Much Fertility Leaves The Farm?*.....Cyanagrams 92

*Short Features In This Issue. One Year Continuing Index, **pages 93 & 94**

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IN THIS ISSUE

Your big problems these days are not all on your land or even at your market place. Some have moved to Washington and others are in men's minds. For that reason, we advise you to read the first three articles on pages 1-16. They are important.

* * *

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The Farmer's Digest

Volume 25 November, 1961 Number 5

Forecast of Government Farm Strategy

Federal men drop plans for quick broadening and tightening of controls. They now aim to "educate" farmers and the public, and gradually place new curbs on production . . .

Condensed from Wall Street Journal

Joe Western

THE Kennedy Administration planners are quietly abandoning hopes of quickly bringing off a revolution in Government management of agriculture.

Instead, they're inclined to let time, "fuzz" and "mirrors" slowly accomplish their basic objectives.

Federal controls on crop output up to now have consisted largely of limits on acres to be planted, and industrious farmers have thwarted the planners by applying more fertilizer and improving farm methods. So the Kennedy Administration was planning to substitute a new control system to place primary emphasis not on cutting planting but on curbing actual production and marketing.

Now, however, stiff opposition from some farm groups and many Congressmen has convinced at least some influential Federal officials that what they view as truly effective controls on farm production must await a gradual "re-education" of public, Congressional and farm opinion. These officials believe the chief farmer opposition to tighter controls comes from older farmers who aren't enthusiastic even about present controls. Eventually, the planners figure, most farms will be operated by younger, less-independent-minded farmers who will be willing to accept

Reprinted by permission from Wall Street Journal, Chicago 90, Illinois

higher controls in return for the promise of income protection.

So, for the present, these officials reason, it's politically necessary to "fuzz things up." For several years, they'd settle for stopgap, compromise crop-by-crop production controls headed toward their long-range goals, and they'd disguise increased farm income assistance by doling out more money little by little in a variety of ways under a variety of titles.

"Maybe it'll have to be done with mirrors," remarks an aide to farm boss Freeman.

Reducing Surpluses

Whatever programs are supported by the Administration in the near future must also, it's reasoned, promise to reduce price depressing surpluses and cut costs for acquiring, storing and handling excess production—all without risking the political repercussions of a sharp rise in the consumer price index.

If Secretary Freeman concurs with such views, and there is reason to believe that with some reservations he will, his strategy beginning next year will be to:

Bolster farm income by jacking up price supports a notch on a dozen or more of the most important farm commodities. Thus propping point for 1962-crop corn may rise to about $1.30 a bushel, a dime above this year's level—an increase deemed modest by Freeman advisers.

Pay out more Government cash to farmers through various other channels, including incentive payments for reducing production.

Seek Congressional permission for more marketing agreements allowing farmers and processors to restrict sales of a specified product. A probable 1962 object of this attention: chickens, which lately have been mired in severe price trouble.

Replace present largely-voluntary plans for cutting wheat and feed grain plantings with a single mandatory program, possibly including a combination of planting allotments and limited marketing controls; such controls might apply only to amounts sold for domestic use.

A farm pond can be a source of irrigation, fire protection and livestock water and provide fishing and boating.

Avoid, for the time being, experimenting with more expensive and more controversial new production-cutting or income-boosting plans, including Brannan-type direct payments designed to assure farmers a "fair return" while prices find their own level in the market.

Re-emphasize efforts to cut surpluses through sales for foreign

currencies, gifts to the needy overseas, food handouts to destitute families in the U.S. and school lunch programs, to say nothing of seeking ever larger sales abroad for dollars.

Bowing to Reality

This strategy plainly constitutes a bowing to political reality and a retreat from past positions. The Administration still is reeling from this year's defeat in Congress of its sweeping proposal to let almost any known control and support devices be applied to almost any farm commodity, with individual programs subject to Congressional veto and to approval of two thirds of farmers affected. Officials shrink from again daring to try infringing on Congress' lawmaking prerogative.

Present thinking is quite different, too, from somewhat vague "supply management" proposals that then candidate Kennedy broached in last fall's Presidential campaign. The emphasis then was on curbing farm production in one way or another so sharply that market prices would rise enough to fatten farmer income significantly; while refusing to grant then Vice President Nixon's contention that consumer food prices would mount sharply as a result, Democratic officials do concede that such a plan would mean some retail price rises and in order to aid the farmer, would tend to soak Americans as consumers, rather than as taxpayers.

Indeed, candidate Kennedy then was promising outright savings in Federal farm budgets via "supply management." Said he: "It's my best judgment that our agricultural program will cost $1.5 billion, possibly $2 billion, less than the present agricultural program . . . which costs about $6 billion a year—the most expensive in history."

The U. S. has more than 800 different kinds of trees.

Now, after an eight-month brush with the practicalities of life in office, influential planners are backing away from such spare-the-taxpayer concepts. So politically touchy is the state of the consumer price index, finds a key Administration adviser, that it's impossible to generate much added farm income out of higher market prices. Instead, the planners propose to put a good-sized share of the farm burden on both consumers and taxpayers. And Mr. Freeman's closest aides now foresee no hope for reduced agriculture spending during the fiscal year starting in mid-1962, for which budgeting is now beginning.

Omens of Resistance

Looking just ahead, Administration planners recognize omens

of Congressional resistance to the supply management idea they warmly approve in principle: Tight marketing controls based on bushels, pounds or bales. One such plan, providing marketing quotas for wheat in terms of bushels sold for domestic food and export use, is being pushed by the National Association of Wheat Growers and is endorsed by most wheat-state legislators. But the Southern Democrats who run the House and Senate Agriculture Committees are dead set against the idea, and its prospects are considered dim in next year's session.

While bushel quotas for wheat do have the support of many growers, officials find a large segment of the total farm population still will not accept more stringent production c o n t r o l s. This obstacle to the long-term change desired is said to concentrate among the older generation that runs the smaller farms.

"At seminars and talks I've made around the country," reports one economist, "I can often anticipate the questions and attitudes of farmers who discuss farm problems. If a farmer is fiftyish, has a white band from the middle of his forehead upward and is dressed in work clothes, he usually wants less government in farming and more freedom to plant and plan as he pleases. Generally, he farms a relatively small acreage." To these old-school folks, it is almost sinful to produce less than they possibly can.

"But," adds this same official, "farmers in business suits, often of the younger generation, they are the ones most interested in a supply management program. It's these men who operate their farm as a business—not the ones who look on agriculture as a way of life—who want to find some means of controlling output and improving prices they receive."

Long-Range Hopes

On these operators and the expected coming of others like them, officials are pinning long-range hopes for gaining more power to call the shots on farm production and to provide companion protection for farm income. Without such intervention, the Administration's planners insist, U.S. agriculture production and prices can never really reach a balance with the prosperous remainder of the economy.

Four out of every 10 jobs in private employment are related to agriculture.

This conclusion is based partly on the idea that agriculture is an industry faced with high fixed costs and a rather inelastic demand—a demand that can't be basically stimulated by price cuts. For the past 50 years the average

American has pretty steadily been eating about 1,500 pounds of food a year; increases in total food consumption thus hinge basically on increases in the national population, though price changes can alter eating patterns. In such an industry, the reasoning goes, unrestricted competition just won't yield prosperity. As evidence, officials point to attempts to fix prices and curb competition in some manufacturing industries, such as heavy electrical equipment, which are said to face the same underlying conditions.

For other reasons, too, the Administration's theoreticians expect the threat of price-depressing surpluses to continue to overhang the nation's farms. In support of this forecast, they offer what they call the "treadmill theory" of agriculture.

How to Make Money

This theory starts with the assumption that no one individual farmer's production can affect the prices he receives for his output; he can't push prices upward by cutting his own production, but neither will he depress prices by boosting his output. Accordingly, the only way for him to make more money is to cut unit costs and raise sales by increasing production.

To do that, the best, most efficient and wealthiest farmers quickly adapt new technological advances to their own operations. At first this vanguard profits handsomely; its expanded production does not affect the nation's total output much, and current prices not at all.

As other farmers, less efficient and less affluent, join this parade, they too benefit for a year or two. But when the new production methods are adopted generally, the nation's total farm output increases enough to drive prices down.

Farm income on most farms can be increased by using existing resources more efficiently or by acquiring more resources. Rapid changes in agriculture make it imperative that farm people do better planning.

Meanwhile, the best farmers have found still newer production methods. According to this theory, farmers soon find themselves running faster and faster trying in vain to catch up with the leaders, while prices tend to be depressed ever further by excess supplies—unless Government intervention can prevent it.

One way to slow down the treadmill obviously would be to cut Federal spending for research designed to expand production. Indeed, some Government farm planners privately advocate diversion of more of this money to

market development. But they also view any big shift as politically unacceptable; not only would fertilizer and farm machinery firms object, but so would thousands of county agricultural agents, land-grant colleges and others engaged in farm research projects more or less dependent on Federal support.

A Wringing-Out Process

In theory, Kennedy Administration planners concede, the nation's farm problems could be solved by stripping U.S. agriculture of all Government protection and letting it go through a wringing-out process on the free markets that might last several years. Production finally would decline and surpluses would be used up, but only, it's contended, because low prices over the long haul would finally shrivel farmers' income and the capital available for investment in machinery, feed, seed and fertilizer necessary to keep up with the demands of a growing population.

In practice, few thinkers of any school of opinion are seriously advocating such a solution. It's considered politically impossible even if economically desirable. And Democratic planners insist it would not make economic sense.

"I reject this solution on two grounds: One, I believe this nation believes in making it possible for all important segments of the economy to earn fair incomes; and two, if so large and important a part of the economy as farming is in chronic depression, the rest of the country eventually will be retarded or pulled into a state of depression with it," a highly-placed official says.

Hence the planners are busily seeking ways to neutralize the treadmill effect, though resigned to the fact that they can't now put across the prompt and sweeping solutions they'd prefer.

(Read the article "Grandpa's Day Is Past!" on the next page for a farmer's thoughts on the necessity for a changing attitude.)

If you wish to feed a given weight of feed and have no scales on which to weigh it but do have a quart measure handy, the required weight can be measured out by referring to the following table. The quart weight of various feeds is approximately as follows:

Cottonseed meal, 1½ lbs.; linseed meal, old process, 1.1 lbs.; gluten meal, 1.7 lbs.; gluten feed, 1.2 lbs.; wheat bran, coarse, ½ lb.; wheat middlings, coarse, 0.8 lb.; wheat middlings, fine, 1.1 lbs.; mixed wheat feed, 0.6 lb.; corn meal, 1½ lbs.; oats, 1.2 lbs.; rye bran, 0.6 lb.

Grandpa's Day Is Past!

. . . and his mode of farming should be framed like a Grandma Moses painting and hung over the mantle while farmers get together to support a realistic farm program . . .

Condensed from
Western Crops and Farm Management

Ed Lawrence, Wheat Farmer, Waitsburg, Washington

IF GRANDPA were alive today he would wonder what in tarnation had happened to life on the farm with all these new-fangled "allotments", "support prices," "soil bank," "social security reports" and all the worrying about what's going to happen back along the shores of the Potomac.

Grandpa, the original proprietor of our "family farm," was a strong branch of a family tree that had roots in the soil, and he always allowed as how he could tell any man to "go to hell!" I suspect the first time a man from the allotment office came out to measure his wheat field, the old boy would boot him right out the front gate.

There have been many changes in agriculture since I was a gangly boy meandering down to the little school house at the forks of the road. I can remember, most of all, Grandpa's team of dusty mules coming in to the barn at noon and night, their halter chains jingling and the leather creaking, to pull up at the long watering trough.

Farm Boyhood

Every year a couple of old Percheron mares were led over to visit a neighbor's jack, and I can recall the boyish wonderment when next spring two little mules would suddenly appear in the pasture. The farm was stacked to the eaves with hay for the mules. I remember in those days the only fertilizer that was used was found by running around to the other end of a mule — and the "other end" of a mule was a good place to stay clear of.

Grandma and mother canned fruit, preserves and vegetables all summer long. Every day they skimmed the cream from the brimming milk pans in the cellar, with part of it saved for the weekly churning. They made

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sauerkraut, hominy, and baked lovely smelling bread and pies. Grandma even washed and carded some of the wool from the small band of sheep to make mattresses and quilts.

The shoats were slopped daily, the neighbors got together for hog butchering, and Sis hunted for eggs from the catch-as-catch-can Rhode Island Reds. There was always wood to chop for the kitchen range, kerosene lamps to fill from a gallon can with a potato stuck on the spout and the monotony of hoeing weeds in the corn patch. In the 1920's there weren't any late, late shows on television.

In those days, if the price of wheat went down, as it usually did, Grandpa read the mail order catalog more for pleasure than for ordering, and he made out because it didn't take much cash to farm in that by-gone era. Grandpa could tell anyone to "go to hell' because he WAS independent. He raised his pulling power, the mule fuel, the food he ate and a big enough family to do most of the farm work. It took just two essential ingredients — hard work and plenty of thrift.

These are pleasant memories of a small boy growing up on a farm some thirty-odd years ago. Probably many other farmers cherish similar memories of fiercely independent ancestors. While we all envy Grandpa his freedom there does not seem to be any wholesale desire to return to a time of rolling out of bed at 4:30 to harness the mules or making trips to any icy-seated little house out back.

Down The Road

Soon after Grandpa passed on to his glory, those ornery gallant mules were led down the road to oblivion, and they met a truck coming in the lane hauling a bright, yellow tractor. When dad traded in the curry combs and the hame straps for a set of socket wrenches and a welding outfit, the old, independent way of life started fading away.

Thereafter, machinery salesmen knocked at the door about once a week and the oil dealer came so often he was almost a member of the family. Soon all the new chemicals started coming to the countryside. Balanced fertilizers, weedicides, fungicides and pesticides — it would be enough to drive Grandpa to suicide.

In a very short span, an older generation's self-reliant operation disappeared in a cloud of diesel smoke and chemical fumes. Farmers became businessmen in overalls, dependent on all kinds of cash-on-the-barrelhead products of our thriving American industries.

The REA brought a lot of new, whirring gadgets to the kitchen, too, so the womenfolk could

spend more time driving to the grocery store. (I can imagine the shattered connubial bliss if Grandma had ever come home late from a PTA meeting and thawed out a TV dinner for Grandpa's evening meal.)

Changing Attitude

In the early thirties, out of the hard times of the depression, came a change in the attitude of the federal government. Congress became a great mother hen trying to look after the welfare of all its chicks. Many laws were passed in an attempt to get everyone working, spending and paying higher taxes. Part of this New Deal was the farm program with price supports, allotments and other aids to the men who lock horns with nature. These same laws, with minor revisions, are still with us.

Not only have the ways of farming changed since Grandpa led the mules up to the watering trough, but of equal consequence has been the transition in the lives of Americans in the cities. We have seen greater and greater concentration of production into the hands of fewer and fewer large corporations. There has been the rapid growth of potent labor unions to bargain with these nation-wide firms. We have seen the expansion of government intervention into the lives of 180 million Americans, most of them quite willing to have laws that will make their lives more secure.

Meanwhile, back at the ranch, with all the fancy new machines, the magic powders, the better hybrid seeds and all the bulletins from the extension service, farmers developed an over-sized green thumb. We entered the age of the surplus. Even with the old acreage allotments, today we are producing way more of the "basic," storable crops than the market can possibly handle. This over-run ends up in government storage and the taxpayers are getting hot under the collar about the whole affair.

For some years an energetic debate has been going on over what to do about these surpluses. The farm organizations are about as united as the United Nations. Farmers are confused and divided over what they believe is the answer. Some farmers and their leaders are fed up with all the needling from city writers, much of it exaggeration and only a little of it true; so, in their frustration, they say: "See, you can't legislate farm prosperity, the only answer is to throw out the farm program and go back to the old free market system." They say, "farmers 'want' fewer controls."

The price of U.S. farm land increased 250 percent from 1910 to 1960.

This point of view represents the men with admirable dreams who believe farmers can be like Grandpa, free and independent husbandmen living in a world of several decades ago. Possibly if everyone in the United States operated in a freely competitive society farmers could go back, but this is not the case.

Limitations

Many other farmers take a sober look at the charts and wiggly lines drawn up by the farm economists, and even though they think Grandpa was one whale of a fine fellow, they know we've passed the point of no-return. They see that the total American stomach is just so big, they note there are limitations on the amount of food that can be exported overseas, and they see that there are no substitute crops to turn to that are not already in surplus or ample supply. To return to the free market at such a time as this would be economic suicide.

They are aware, too, that the old classic idea that the prices of all goods are set by many buyers and many sellers in an open market using the force of supply and demand, just doesn't work quite that way any more. The relatively few big industries seem to have acquired the logical built-in means to control production pretty well so they can, in general, maintain profitable prices. The strong labor unions continue to get higher and higher wages solely from militant bargaining power. And over it all big government is spending money and passing laws right and left trying to keep everyone secure and prosperous.

Another thing wrong with the younger generation is the short memories of their parents.

We may shake our fists at the ghosts of Henry Ford and Franklin D. Roosevelt for the world they helped create, but we can no more change it than we can stop a farmer's annual urge to get out in the sun and plant seeds in the soil when the warmth of spring spreads across the land.

The day is passing when a lonely farmer can withdraw within his barbed wire enclosure and sow and reap as he pleases and then deliver his harvest to the bins and boxcars and hope for the best. He simply cannot pay the rising prices set by farm suppliers, on one hand, and receive his income from a free market surrounded by surpluses, on the other.

There is a growing awareness that to compete in today's economic society, agriculture must have some sort of muscles of its own. More and more fruit and vegetable growers, as well as other food producers in a limit-

ed workable area, are turning to marketing agreements and bargaining cooperatives to gain better prices, to promote sales and at times to control production.

This trend will continue and it's the "American Way" for it involves semi-voluntary group action without much government aid. However, it does involve sacrificing a certain amount of individual decision-making for the "common good."

Uniting The Independent

Those of us who raise the farm "scandal" crops, such as corn and wheat, are scattered across the breadth of this fertile nation. As of now there is no way of uniting thousands of growers, many as independent feeling as Grandpa, into an effective organization to bargain or restrain unneeded production. It boils down to the fact that the only place we can gain marketing strength is through the cooperation of federal lawmakers.

Today a farm is not an economic island. What happens to Old MacDonald and his rural neighbors has a direct bearing on the pocketbooks of the men along Mainstreet in Wheatville, U.S.A. and further on to the tractor builders in Moline, the oil men in Texas and the fertilizer makers in Wilmington, Del. Congress has a soft spot for these people, too, so it isn't going to allow a good many farmers the dubious pleasure of playing freeze out with long-time, low prices.

With all its present shortcomings, the much-abused farm program that is still on the books isn't as bad as it's sometimes pictured. Over the years it brought a measure of well-being and stability to many, many farmers. Like any man-made mechanism it needed occasional adjustments, periodical overhauls and some appreciation of its value by the men who ran it — and this it has not had for a long time. Now it is so out of whack and patched with baling wire that the only answer seems to be replacing it with a new model.

It is time for farmers to realize that come Hell or high water there will be a new model farm program to cope with our galloping over-production. It is time to find a reasonable middle-ground between the extremists who would return to the age of William McKinley, and the men who would make controls so tight it would eliminate all incentive. Agriculture cannot go on and on with its leaders at odds over misplaced nostalgia, while the surplus piles higher and higher and the public's opinion of the farmer goes lower and lower.

There's A Price

In creating a new farm program let us know that we can't get something for nothing. If government guarantees a mini-

mum price, whether it is high, low or tippy-toe down hill, in return it must have realistic controls on that production or the plan will fail in the long run. The taxpayer will not tolerate it.

The program should be aimed at making it possible for farmers to receive a reasonable price in the market place and not base his income on sky blue checks from the U.S. Treasury. But let us not delude ourselves that a little tinkering with the level of price supports can bring about an easy, automatic adjustment that will in a short time make everything jim dandy.

Farmers should recognize, too, that no farm program is going to remove all the risks from farming, or guarantee every man a profit or stop the inevitable trend toward efficient-sized farms.

Time is running out as farmers' numbers and influence decrease, but with unity and reason agriculture still has the chance to agree on farm laws that will bring tolerably good livings to the growers plagued with surplus. These laws need not destroy personal individualism or the incentive to be a better farmer.

A farm can still be a fine place to raise crops — and boys and girls — even though Grandpa and his mules are long gone down the lane.

(Read the article on page one for government's attitude toward farmer's future.)

How To Prevent Breast Blisters on Broilers

Poultry producers can save much of an estimated five million dollars lost annually because of breast blisters on broilers by following four simple rules.

The Louisiana State University Agricultural Extension service pointed out that breast blisters cause serious downgrading of broilers processed in plants.

To prevent this, broiler producers should:

(1) Keep litter dry and at least six-inches deep.

(2) Allow one square foot of floor space per bird.

(3) Market birds at eight to 8½ weeks of age.

(4) Avoid sudden noises which cause birds to crowd together or pile.

—Louisiana State University

For each pound of milk produced by a dairy cow, it is estimated that 400 pounds of blood must pass through the udder. A cow producing 10,000 pounds of milk per year must pump 2,000 tons of blood through the udder in that length of time.

How Farmers Can Win Friends

They never needed to so much! Here are a few things that will — and won't — work . . .

Condensed from Farm Journal

Ed Lipscomb, Public Relations Director,
National Cotton Council

PEOPLE on farms today account for only about 9% of the U.S. population—a statistic which, in more ominous form, means that they do not account for 91%.

Flogging the farmer has become a national pastime with most of the press. City newspapers, magazines, newscasters, columnists, cartoonists—even church papers—all are laying on their whips.

They blame the farmer for inflation, for high taxes, for federal deficits, for the high cost of living. Most people are convinced that "the farmer" is standing around with hat in hand taking outrageous hand-outs "from us taxpayers."

Never have the farmer's public relations been so bad—never has he needed so urgently to do something about them. In fact, the choice has become one between *better public relations and a definite turn toward peasantry.* It's not a matter of going back to sickles and burros, but rather the prospect of severely limited opportunity, oppressive restraints, powerless bargaining positions and economic mediocrity which are the basic ingredients of peasant life.

Let things go on as at present and politicians, always with a sensitive ear to the ground, will abandon farmers in even greater numbers. Instead of sound consideration of farm programs, we'll get sudden, jolting, even punitive actions.

Fortunately there's something we can do about it, as we'll see in a moment. But first I think we've got to realize a few facts of life about this thing called public relations.

First let's look at some tempting tactics that won't work.

We won't win friends by pointing out that "others, too" get subsidies, true though it is. Have you ever heard of a policeman who caught a driver speeding and then let him go because he in-

Reprinted by permission from Farm Journal, Philadelphia 5, Pennsylvania

sisted another car was speeding too?

This approach is particularly appealing . . . there's so much ammunition around, and the plea has so much justice. But it won't do the job.

Neither can we shift the public's view to "the politicians." We helped elect them.

Nor can we escape blame because "our kind of farming isn't involved" or by pointing out that "only 23% of farm crops get a subsidy." Unfortunately, the public won't sort farmers. Public criticism of farmers is not a rifle-shooting situation. It's a buckshot barrage. And public ire over farm policies can quickly affect the treatment that all farmers get in matters like wages and hours, tax allowances, social programs, marketing rules and many others.

Another thing that won't get us anywhere is to try to slug it out with a prejudiced or unfriendly city press. We get a protest printed in the "Letters" column now and then, but the editor has the last word. Besides, you seldom convert a human being by telling him he's wrong. Rather we've got to *persuade*—over a period of time—and to present something the editor will buy.

Which gets me around to what will work.

The average city dweller is not concerned about your problems—he is concerned about his. And that means that *you've got to show him that your problems and his have something in common. Come at the issue from his viewpoint—show him that what you stand for is to his benefit*—and he'll listen. City people are concerned about taxes, installment payments, places to park, and the high cost of living. Most of them don't know how food gets to the supermarket and don't care, so long as it's cheap and always there.

Dairy cow income accounted for the biggest single "slice" of total farm income last year.

They wouldn't know a kernel of wheat from a sunflower seed. These people won't take the time to understand the "farm problem"—they figure they couldn't anyway. But they'll pay attention right quick if somebody shows them it's *their* problem, and that what is best for farmers is really *in their long-time best interest, too.*

The real test, then, of any farm policy or proposal becomes: Is it in the long-range interest of the public?

The first thing farmers need do is take an honest, and perhaps a fresh, look at that question. We need a good look in the mirror!

One of the most erroneous ideas about public relations is that it is a broom with which to sweep sins under the rug. Actually public relations consists of two parts: Living right and then getting credit for it, but living right has to come first.

It behooves us, then, to review where we ourselves stand, and where our own particular farm organization stands. Are your positions, your points of view, the legislation you urge, the resolutions you support—are these such that you conscientiously can sav, down in your heart, that they are in the *public* interest, as well as your own? If not, you'll have to change these first.

How do we get the job done? Usually the first thought in a national public relations problem is for everybody to contribute to a central pool of cash, hire the best talent available, and sit back to await results.

People who are carried away by their own importance never get very far.

In many situations this works, but it won't work for agriculture. "The farmer" is not a homogenous group. He is many people, many groups, with many opinions.

But there's a two-fold way we can tackle the job. Our national, regional, and state farm and commodity organizations must take on the first part of it. *And you as an individual member must demand (not just suggest) that they do!*

Let it be known—by voice in meeting and by letter to the officers between meetings—that you do not mean a piddling effort, a nominal assignment to somebody on the staff who is already over-worked, or a referral to a committee. Nor do you mean something intended to promote the organization. You want it to be one of the organization's major enterprises—well staffed and well financed.

Such organization can do two things: (1) reach metropolitan editors, broadcasters, TV commentators and columnists who in turn reach millions, and (2) provide materials for you to use locally. What you need are facts; you need ready-written material for local placement; you need a manual that shows you effective techniques.

Beyond question, much of the farmer's public relations program has to be done locally—that's the second half of the job. This means that your local farm group must have a vigorous information program of its own. I suggest that you add a public relations officer, and back him with a small committee willing to work. Have this committee report, frequently.

"But we're farmers—we can't do this," you may be saying. Yes, you can. Actually your local newspaper, radio or TV station, luncheon club, or women's club will *welcome* you and the facts you bring them. Try it, and you'll likely find you enjoy the experience.

Use not only what comes from your state or national organization, but tell what your local group is doing—its current activities, the positions it takes. Invite town people to address your group; establish two-way contacts. Misunderstanding thrives on isolation.

Don't expect overnight results. An idea can be flashed clear around the earth in a second these days, but it may require months if not years to penetrate a quarter inch of human skull. I know one successful public relations man who maintains that it takes 32 repetitions of an impression before it finally lodges in the average mind.

Don't assume, either, that public relations is something you can turn on and off as needed, like a faucet. Any effective program has to be continuous.

If your story will stand telling, and if you tell it right and often enough, you will gradually get the job done. Davy Crockett was giving sound public relations advice when he said, "Be sure you're right—then go ahead."

1961 Farm Output May Equal Record

Government forecasters figure output of meat, milk, eggs and other livestock products will outdistance the 1960 mark by 5%, about offsetting an expected decline in field crops. Beef production is expected to rise 3% to a new high while a 26% rise in turkey output is forecast. Milk flow is put at 124.5 billion pounds, up 1.5 billion from 1960.

Crop production was estimated at 4% below 1960 at the beginning of September, but veteran Government economists say the October 1 forecast, due next week, will raise the prediction. Feed grain output is expected to fall 11% below 1960 and wheat harvests are likely to drop 10%, but these declines probably will be partly offset by a 29% rise in soybeans and by bigger sugar and tobacco crops.

U. S. farm production reached a record 127% of the 1947-49 average last year, up from 125% in 1959 and more than 8% ahead of total domestic and export needs. —*Commodity Letter*

Cutting Costs and Increasing Dairy Profits

Feed and labor are the largest costs. How can management keep these items low enough to produce a substantial profit? . . .

Condensed from Guernsey Breeders' Journal
Frederick A. Hughes, Farm Management Section, Pennsylvania State University

THE management ability of many dairy farmers over the country is being seriously challenged by lowered milk prices and increasing costs.

There are dairymen fortunate enough to have a $6.00 or $7.00 milk market. Others have a market paying less than $4.00. In years to come, these prices might be equalized with larger, more efficient producing units, federal sanitation regulations, federal milk orders, or production quotas.

The dairy business could become more competitive than it is at present. Many dairymen will need to make management adjustments to compete not only with their neighbors, but with farmers in other states.

If adjustments are to be made on a specific farm, the operator must have some basis for making his decisions. This involves a detailed knowledge of the farm situation, which is possible only with a good set of farm and herd records. From these records, it is possible to determine production costs involved and what can be done about them.

Cost of milk production figures are available, which vary tremendously between farms and between regions of the country. For example, some cost figures vary between $4.00 and $8.00 per hundredweight of milk produced. Probably a large number of these would range between $4.75 and $6.00 per hundredweight. If all costs are to be met, when milk prices are less than these costs, adjustments must be made.

Major Costs In Milk Production

What are the major cost items to produce 100 lbs. of milk? Feed is usually the largest, making up

Reprinted by permission from Guernsey Breeders' Journal, Peterborough, New Hampshire

45 to 55 per cent of the total cost. Labor is usually the second largest. The balance of costs include buildings, cow depreciation, interest on investment, breeding, DHIA, veterinary, miscellaneous supplies, electricity, and phone.

The greatest possibility for reducing the costs of producing 100 lbs. of milk is in the feeding program. Cost reduction is possible by changing the type of feed, the cost of feed, or by increasing production of milk per cow. Some farmers overfeed their cows with too high a protein mix, while many underfeed. Results from the forage testing program in Pennsylvania in 1959 showed that 65 per cent of the grain mixes recommended were less than 12 per cent protein. Only 15 per cent were over a 16 per cent protein mix. As a result, many dairymen are feeding a grain mix costing $50.00 to $60.00 per ton. Many were formerly paying $70.00 a ton.

In most cases, the mixes recommended consist of 80 per cent corn and cob and oats, and 20 per cent protein supplement, soybean or some other high protein food, plus bonemeal and salt. A low cost ration makes it possible to feed at heavier rates and still show a profit for the increased milk production. Research information from many land grant college experiment stations has shown that heavier grain feeding at present prices is profitable with many cows. Research also indicates that milk production can be maintained at higher levels over a longer period of time with heavier grain feeding. Many farmers in Pennsylvania have increased milk production per cow by increased grain feeding according to forage test recommendations. Some dairy farmers have decreased grain feeding, according to forage test recommendations. Some dairy farmers have decreased grain feeding, when forage quality has been good or excellent.

Plastic coated containers for packaging fluid milk are now being used on a trial basis. The new containers are said to eliminate loose wax particles in the milk, do away with leaky cartons and improve the appearance of the package.

Cropping Systems May Be Adjusted

Many dairymen have adjusted their cropping programs to obtain more high quality forage. In many areas this has been a profitable change. It has permitted the farmer to specialize in fewer crops and thereby produce higher quality forages more economically. At present prices, forage does not have the economical feeding advantage over grain

TABLE 1

Value of a Pound of Total Digestible Nutrient in Corn As Compared to Hay at Given Prices for Each

Price of Corn* per bu	Value TDN per lb.	Price Hay** per ton	Value TDN per lb.
$1.90	3.7c	$45	3.75c
1.25	2.5c	35	2.9c
1.00	1.9c	25	2.1c

*Value TDN in corn and cob equals 74%
**Value TDN in hay equals 60% (good quality)

that it did a few years ago. This is illustrated in Table 1.

Each dairyman should determine the cost to produce a ton of forage and the cost to produce a bushel of grain in relation to what he would pay for these crops.

In most cases, Northeast farmers are better off to produce forage for feed and buy grain from the grain producing areas. In the corn belt area, dairymen may be better off to produce and feed grain heavier than forage crops. Questions can also be raised on how much money a farmer should spend on improving forage quality.

For example, with corn at $1.25 per bushel as shown in Table 1, hay of equal value testing 60 per cent total digestible nutrients would be valued at $28.80 per ton. With corn at $1.00 per bushel, hay at 60 per cent TDN would be worth $22.80. The question a farmer must ask himself involves the cost of producing the hay. In too many cases, dairymen with a small hay tonnage go overboard on equipment to improve quality and end up with high cost hay in relation to grain.

The price a farmer pays for his feed, or the cost of producing it on his own land, will determine which feeding program returns the most profit above feed cost.

Milk Produced Per Man Important

The second important item of cost in producing milk is labor. The milk produced per man must be increased to decrease the labor cost per hundredweight of milk. This can be accomplished by adding more cows or by increasing production of milk per cow.

We feel our dairymen should produce a minimum of 200,000 lbs. of milk per man plus field work. This will probably increase to 300,000 lbs. of milk per man as labor rates continue to increase and the desire and need for more family income increases.

The best way to increase the milk produced per man is to increase the production per cow. An increase in cow numbers should be secondary to increased milk production per cow. More

cows can be handled per man by improved chore methods, barn remodeling and labor-saving devices.

Many times chore methods can be improved with little or no cost. Milking is the most time-consuming chore. A change to a *managed milking procedure* costs nothing. Research and farmer experience have proven that one man with one machine in a conventional barn can milk 18 to 20 cows per hour. Use of more than one milking unit per man may mean more cows per hour but is frequently costly in terms of herd health. On farms where a milking parlor is used, one man can handle two or three machines efficiently.

A rearrangement of feeding procedures, using carts, circular travel in the barn, hinged doors in the barn floor over the feeding area, and a central area for barn tools, are all examples of inexpensive ways to improve chore efficiency. Automatic gutter cleaners and silo unloaders are more expensive methods of improving chore efficiency. Additional cows or more production per cow is necessary to pay for these innovations. Farm families should have some leisure time, and too often an increase in cow numbers results in more hours of work reducing the leisure time.

Practices such as DHIA and artificial breeding have been adopted by farmers. The primary purpose of these practices is to increase production per cow. Unless production has increased, costs have increased more than income. There are other costs, such as veterinary, miscellaneous supplies, electricity, and buildings, which keep rising. Increased production per cow must pay these costs.

The 1959 DHIA summary for Pennsylvania indicates the desirability of having high producing cows to keep production costs per cwt. of milk down.

The costs that must be paid from the return above feed costs are building costs, veterinary, miscellaneous supplies, DHIA, breeding, electricity, phone, de-

TABLE 2

Pennsylvania 1959 DHIA Herd Comparison

	Lbs. Butterfat per Cow			
	Over 500	400-500	300-400	Under 300
No. of herds	208	1,527	1,774	277
Milk per cow (lbs.)	13,321	11,136	9,078	6,885
Fat per cow (lbs.)	526	438	362	275
Total feed costs per cow	$268	$235	$209	$181
Feed cost per cwt. of milk	$2.01	$2.11	$2.30	$2.63
Return above feed costs	$423	$338	$259	$170

preciation on cows, interest on cows and labor. The total of these costs, except labor, will usually average between $150 and $200. This leaves a very low labor return for the herds under 400 lbs. of butterfat.

The number of cows necessary to return $10,000 above feed costs varies with their level of production per cow and price received for the milk. When 1959 Pennsylvania DHIA production records and prices are used, 24 cows, whose average production is above 12500 lbs. of milk, and 500 lbs. of butterfat, are required. As average production per cow decreases, the number of cows needed to return $10,000 above feed costs increases. It would take 30 cows averaging 10000 to 12000 lbs. of milk and 400 to 500 lbs. of butterfat; 40 cows yielding 7500 to 10000 lbs. of milk and 300 to 400 lbs. of butterfat per cow, and 60 cows if average production is less than 7500 lbs. of milk and below 300 lbs. of butterfat for a $10,000 return above the cost of feed.

Figuring 20 cows per man for each level of production, it would take 1.2 men for 24 cows, 1.5 men for 30 cows, 2 men for 40 cows and 3 men for 60 cows. If miscellaneous costs, other than labor, averaged $150 per cow for each level of production, the labor returns per man would be $5,460, $3,760, $2,180, and $400, respectively. This would be a return per hour of labor of $2.28, $1.57, $.91, $.17. Too many dairymen are working for these lower wages.

The future of many dairy farmers over the country is going to depend on their ability as managers. The larger our family farms become and the more capital invested, the more difficult the job of management becomes. It will take a good farmer-businessman, watching all the details, to be our milk producer of tomorrow.

Training A Farm Worker

The four steps in training a farm worker have been outlined as:

(1) Tell him what you want done.

(2) Show him how to do it.

(3) Let him do the job under your supervision.

(4) Put him on his own and check back from time to time to see if the work is being done right.

Put the man on his own as soon as possible and let him make some decisions himself. Decision making is one of the very best training tools.

—*The Farm Picture*

How To Choose Your Least-Cost Feed Ration

What will the menu be — corn, barley, concentrates, hay? Cost and feeding value must be taken into consideration . . .

Condensed from Better Farming
Jack Sampler

THERE'S a great deal of wisdom and hard-won experience in the old axiom that, to the livestock business, a little too much feed is just about enough.

Certainly there will be a little more than enough feed for all species of livestock and poultry in the coming feeding year. For every ton of feed that's needed in the coming season, USDA and other feed survey reports indicate that 1½ tons will be available.

The cost of feed runs about 85% of the total cost of putting a fat steer on the market; for hogs, it's 80%. Thus, the cost-conscious and efficient farmer can probably save from 15% to 25% of his annual food bill by taking advantage of the best feed buys in terms of feeding value.

The average fed steer, for example, will consume about 1700 pounds of grains and 125 pounds of high-protein feeds. The average hog fattened for market consumes 440 pounds of grains and 30 pounds of 46% protein supplement or equivalent. The average fed lamb requires about 110 pounds of grains and 13 pounds of high-protein feeds.

Livestock feeding succeeds best where home-grown feeds such as pastures, roughages and grains are the foundation of economical rations. These rations, of course, must be properly supplemented with needed protein, vitamins and minerals.

New and recent discoveries in the field of livestock nutrition have improved feeding formulas and feeding practices, but today, as always, the key to feeding profits is efficient and economical rations.

If your feed bill is too high, maybe you are not doing a good job of buying. There is a limitless number of combinations of roughages and concentrates available —all producing about the same

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Better Farming, The Oliver Corporation, 1119 West Sample Street, South Bend 21, Indiana

rate of gain. Usually one combination of feeds will cost less than another combination. The trick is to buy the feed, or combination of feeds, that provides the greatest feeding value per dollar invested.

Prices of grains and meals fluctuate rather rapidly and often rather sharply during the year. These changes are the result of such economic forces as the time of harvest, the size of the crop, price supports or lack of them, feeding demand and various other factors.

In choosing any least-cost ration, you must consider these seasonal fluctuations in the prices of feed grains, concentrates and protein feeds. Use the following table based upon USDA crop reporting data to check the low seasonal price of certain feed grains and fill your bins at the proper time.

Considering that the market prices of various feeds are based upon different bushel-weights or hundred-weights, with varying feeding values per pound, how can you know in advance which feed is the best by for your feeding program? (See table.)

Corn prices, for example, are quoted in bushels of 56 pounds; wheat, 60 pounds; barley, 48 pounds; oats, 32 pounds. (Each of these figures makes one bushel.) Grain sorghum is sold by the hundredweight; hay, by the ton or bale.

The only common denominator you can use with safety is the feeding value—per bushel, per bale, per cwt., per ton. In order for you to make these computations before the market price changes, you'd have to be a mental marvel or hire an electronic calculator.

You can do the job quickly and profitably, however, with the aid of the Feed Grain Substitution Tables which appear with this article. These tables were compiled and copyrighted by Dr. Leonard W. Schruben of Kansas

TYPE OF FEED	Price High	Price Low	Price Difference
CORN	Aug.	Nov.	14%
OATS	May	Aug.	23%
BARLEY	Apr.	Aug.	10%
SOYBEAN OIL MEAL	July	Dec.	17%
COTTONSEED MEAL	July	Oct.	7%
LINSEED OIL MEAL	Jan.	June	13%
ALFALFA HAY	Jan.	June	24%
ALFALFA MEAL	Jan.	June	22%

State College, one of the nation's foremost feed nutrition experts, and they are re-produced here with his permission.

Prices of high-protein feeds also change sharply in response to changes of supply and demand. The price of meat meal or tankage at Chicago during the past four years has ranged from $2 to $50 a ton more than soybean oil meal. These wide swings in prices are not uncommon.

In buying protein supplement the main point to consider is: "How much does each pound of actual protein in the supplement cost?" G. R. Carlisle of the University of Illinois has worked out a quick method of figuring this cost. If the per cent of protein in the supplement is 44, then to get the cost of one pound of actual protein, multiply the price (in cents) by 2.27. These figures vary according to the protein percentage. (See table.)

Per Cent Protein in Supplement	Cost of 1 lb. Protein is Cost Multiplied by:
44	2.27
40	2.50
36	2.77
32	3.13
28	3.57
24	4.17

The result will be the cost, in cents, of each pound of protein furnished by the supplement. For example, say a 40% supplement and a 28% supplement each cost 4.5c per pound: 4.5 times 2.5 equals 11.25c (the cost of a pound of protein in the 40% supplement), or 4.5 times 3.57 equals 16.1c, the cost of a pound of protein in the 28% supplement.

If your operation is large enough to buy protein feeds by the ton, you may be interested in the USDA comparison of equivalent values of various protein feeds.

The Great Lakes contain the world's largest supply of fresh water.

When changes in livestock rations are necessary as a result of feed grain substitutions, you should remember to make these changes slowly and not abruptly. Failure to follow sound nutritional and management practices may cost you more than the saving in the cost of feed.

Suppose you are fattening beef cattle and it is necessary to buy grain. Your neighbor offers to sell you corn at $1 per bushel; you can buy barley from the local elevator at 90c per bushel; grain sorghum is available from another source at $2.14 per cwt. All three feeds will be delivered to your farm. Which is the best buy?

Using Dr. Schruben's Feed Grain Substitution Tables, first find the scale for beef cattle and check the price of corn, which is

FIGURE THE COMPARATIVE COSTS:

When the price of soybean meal per ton is:

	$45	$50	$55	$60	$65	$70	$75	$80
—then you can afford to pay the following price:								
BEEF CATTLE FEEDS								
Cottonseed Meal	$42.75	$47.50	$52.25	$57.00	$61.75	$66.50	$71.25	$ 76.00
Gluten Meal	50.60	56.25	61.90	67.50	73.10	78.75	84.40	90.00
Distillers' Grains	30.40	33.75	37.10	40.50	43.90	47.25	50.60	54.00
HOG FEEDS								
Tankage	56.25	$62.50	$68.75	$75.00	$81.25	$87.50	$93.75	$100.00
Gluten Meal	39.40	43.75	48.10	52.50	56.90	61.25	65.60	70.00
Cottonseed Meal	33.75	37.50	41.25	45.00	48.75	52.50	56.25	60.00
Peanut Meal	45.00	50.00	55.00	60.00	65.00	70.00	75.00	80.00

$1 in the first square. Then read down the column to find the cost of barley, which is 75c per bushel, and sorghum, $1.62 per cwt. You can quickly see that barley at 90c and grain sorghum at $2.14 per cwt. is too high, so buy your neighbor's corn at $1 per bushel and you have made the best purchase on the basis of feeding values.

The other tables for feeding dairy cows, for fattening hogs or for fattening lambs can be used in a similar manner to save you money on feed purchases.

We have made tremendous gains in the over-all efficiency of

FOR FEEDING DAIRY COWS

Corn per bu.	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.60	$1.70	$1.80
Wheat per bu.	1.07	1.18	1.29	1.40	1.50	1.60	1.70	1.82	1.91
Barley per bu.	.84	.94	1.07	1.12	1.20	1.28	1.37	1.48	1.53
Sorghum per cwt.	1.78	1.98	2.15	2.32	2.50	2.66	2.85	3.02	3.20
Oats per bu.	.54	.59	.65	.70	.75	.80	.86	.91	.97

FOR FATTENING BEEF CATTLE

Corn per bu.	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.60	$1.70	$1.80
Wheat per bu.	1.12	1.24	1.35	1.48	1.57	1.69	1.79	1.92	2.03
Barley per bu.	.75	.82	.90	.97	1.05	1.12	1.20	1.28	1.35
Sorghum per cwt.	1.62	1.80	1.98	2.14	2.29	2.46	2.63	2.79	2.95
Oats per bu.	.49	.54	.58	.63	.68	.72	.77	.83	.87

FOR FATTENING HOGS

Corn per bu.	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.60	$1.70	$1.80
Wheat per bu.	1.14	1.25	1.36	1.49	1.57	1.70	1.80	1.92	2.04
Barley per bu.	.78	.87	.95	1.03	1.10	1.17	1.20	1.33	1.41
Sorghum per cwt.	1.64	1.80	1.99	2.14	2.28	2.45	2.62	2.76	2.92
Oats per bu.	.49	.53	.58	.64	.68	.73	.78	.84	.88

FOR FATTENING LAMBS

Corn per bu.	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.60	$1.70	$1.80
Wheat per bu.	.91	1.00	1.09	1.19	1.28	1.37	1.46	1.55	1.64
Barley per bu.	.74	.82	.88	.98	1.04	1.12	1.19	1.26	1.33
Sorghum per cwt.	1.77	1.98	2.12	2.32	2.50	2.68	2.85	3.04	3.19
Oats per bu.	.52	.58	.62	.68	.72	.77	.83	.88	.92

livestock production in the past 20 years. The output per breeding unit has increased roughly about one-third. For example, we are getting 40% more beef per cow, 20% more pork per sow, 45% more eggs per hen and 30% more milk per dairy cow. When we analyze these gains, however, we find that most of the efficiency has been in increases per head rather than in feed efficiency.

In the past 20 years we have had a 13% decrease in the number of pounds of feed required per pound of gain on cattle. For example, in 1920-24 it required 10.9 pounds of feed to produce one pound of gain on cattle. Today it's 9.5 pounds, but it could and should be 8.5 pounds or 22% better than 20 years ago.

The feed required per pound of gain for hogs has been reduced 12% during the past 20 years—from 5.1 pounds in 1920-24 to 4.5 pounds today. However, it could and should be 37% better or down to 3.2 pounds of feed to produce one pound of pork. Pigs are going to market too heavy, with too few vitamin and mineral supplements to make the most efficient use of grains.

There's a great future in store for the nation's $10-billion-a-year livestock industry. During the next 50 years, for example, when the human population of the United States and of the world has doubled, we will need 50% more beef cattle, 58% more hogs, 28% more sheep, 62% more broilers, 61% more eggs and 37% more milk.

The successful livestock producer will make his long-range plans now to keep in step with the pace of progress. And more efficient feeding of livestock offers the best chance to match up profit with the progress we are making in feeding, breeding and management.

Changing Patterns In Beef Production

Feeding becomes more specialized with high capital investment . . .

Condensed from Prairie Farmer

M. Paul Mitchell, Livestock Economist, Purdue Univ.

BEEF has played a major role in supplying the people of the United States with one of the most abundant and nutritious diets in the world.

This high-quality diet has been supplied with a farm labor force that shows the lowest ratio to consumer population among the world's countries. Costwise, the American diet can be purchased for a lower number of consumer labor hours than at any other time in history.

Beef's role in the up-graded American diet shows up in consumption. Per capita beef use has increased from 55 to 85 pounds in the four decades since World War I. This is more than a 50-percent rise (see table 1).

Responsible factors for the rising per-capita beef consumption are some spectacular scientific and economic advances in the beef-cattle industry. All segments of agriculture have shared in this progress, but beef has received extensive benefits from increased technology.

Beef consumption could not have moved higher except by heavier production or by drastic increases in beef imports. More production has been chiefly responsible for the higher level of consumption. This, in turn, has been called forth by relatively favorable price relationships.

Beef Production Increases

To achieve this increased production and consumption of beef, several changes have taken place. Beef-cow numbers have increased from about 10 million to 27 million in the 40-year span. Beef cows have not only replaced dairy cows on many farms, but the disappearance of draft horses has left feed patterns suitable for beef cows, especially through the Cornbelt.

Improved technology in crop production has resulted in retirement of more land to forage uses. Land formerly used for cotton production in the South has been diverted to sod crops and consequently beef cattle production. Productivity of ranges and pastures generally has been increased by use of fertilizers, improved varieties of grasses, and soil-conservation practices.

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The fastest method of increasing beef production is to feed the available supply of cattle to heavier weights. This has occurred and average slaughter weight of cattle has increased during recent decades.

For example, the average weight of steers sold for slaughter on the Chicago market has increased from 1025 in the late 1920's to 1164 in 1959. Along with higher slaughter weights has come an increase in numbers of grain-fed cattle. The mounting feed-grain surplus during most of this period has also contributed to this practice.

Hand-in-glove with the practice of "using the cattle longer" has been the reduction in calf slaughter. Between 1956 and 1959, calf slaughter declined by almost 40 percent. Although dairy cows, which supply most of the calves for slaughter, were declining in number during this period, this was not enough to explain the drop in calf slaughter. Rather, it paid to grow out the calves to sell as feeders. Apparently these and other factors have much to do with extreme changes in supply of cattle marketed.

At times, a build-up in supply results from the normal response of farmers to certain economic conditions. A record feed crop with attendant low grain prices favors a high level of cattle feeding. Eventually these come to market in sufficient volume to break prices. Forced marketings of feeder cattle because of poor feed conditions can result in either of two situations.

If feeder prices appear to be real bargains, too many are apt to be placed in feedlots with price consequences in the fat-cattle market showing four to eight months later.

Hog marketings early in 1962 likely will be about 6 per cent larger than in the same period this year.

Or if conditions are not conducive to the purchase of these cattle as feeders, they are apt to enter slaughter channels with more immediate price-depressing effects on the entire cattle price structure.

This makes the seasonal pattern of cattle price behavior largely unpredictable very far in advance. There appear to be some basic changes in evidence in recent years which may be included in the complexities of making decisions in planning cattle-feeding programs.

While seasonal peaks in prices have been extremely variable, they formerly occurred with sufficient frequency during the late months of the year that cattle feeders felt fairly confident of a strong market sometime between

August and January for the better grades of fed cattle. During late years, however, the peaks seem to have shifted from the late summer and fall to the late winter and spring. Is this a happenstance, or have there been basic changes in production and feeding patterns that will tend to perpetuate the newer seasonal patterns?

There are reasons for believing that the changes are more or less permanent in nature and seasonal price behavior may not revert to former patterns.

In the first place, cattle feeding has tended to become a specialized business with heavy capital investment which justifies year-round operation of feedlots. Fat cattle under these conditions tend to be "topped out" as they reach desirable size and finish, whereas formerly they tended to be marketed less frequently. Since cattle feeding was largely a winter job, marketings tended to be bunched in late winter and spring in sufficient volume that prices were depressed.

Silage In Greater Usage

A second reason for a change in marketing patterns can be traced to improved rations which accelerate rate-of-gain and finishing of cattle. Silages have come into greater usage and often double the rate of gain as compared to hay rations during the winter season. Feed additives such as stilbestrol and antibiotics have also made contributions to faster and more economical gains.

Perhaps the most significant factor in the increased beef supply and consumption picture is the shift in cattle production to a "cow-and-calf economy." In the attempt to supply more beef for the American market, beef cows have not only gained in numbers in the Corn belt and southern states, but the range states have shifted their beef production largely to a cow-and-calf basis.

Experts estimate that 70 percent of all work performed by a large size tractor is "light load work." Thus, a grower having an annual fuel bill of $1,000 could save $2,000 over a 10-year period if the drivers would "shift up" and reduce engine speed when doing light load work.

Fewer cattle are held into yearling and two-year age classifications before being sold as feeders. Reasons for this are obvious. Under range patterns of feeding, winter gains on calves were very low, resulting in net gains for the second year of range use of only 200 to 300 pounds per head in contrast with 400 to 500 pounds of beef via the cow-and-calf route. Also, yearlings and two-year-old feeders have consistent-

ly commanded lower prices than calves.

The changes are best portrayed by using the ratio of steers (yearling and older) to cows on farms and ranches in the U. S. in the Jan. 1 inventory estimates. When total U. S. figures are used they will include cattle that have already moved into feedlots by Jan. 1 and the steers that had been kept back on range. Perhaps a truer picture of the situation can be obtained by relying on the ratios existing between steers and cows in the 17 western range states.

It takes 70 pounds more feed to put on 100 pounds of gain when pigs have only nine square feet of floor space than when they have 14 square feet per pig.

Here again, as the result of expansion in cattle feeding in some of the so-called range states like California, Colorado, and Texas in recent years, the figures are not strictly representative of actual conditions, but do show some decided trends (table 2).

These changes have significance as far as marketings are concerned, chiefly because the size and age of feeder cattle moving into feeding areas determine to a high degree the time of eventual marketings. Thus, when yearling and two-year-old steers weighing 700 to 900 pounds move into feedlots they largely determine the potential market supply of top grades of slaughter steers four to eight months later. In contrast to the relatively early movement of the steers back to market, calves do not show up as fat cattle on the market until 15 to 18 months after birth.

Table 1 — Total Beef Consumption Per Capita 1920-1960

Year	Pounds	Year	Pounds
1920	59.1	1940	54.9
1921	55.5	1941	60.9
1922	59.1	1942	61.2
1923	59.6	1943	53.3
1924	59.5	1944	55.6
1925	59.5	1945	59.4
1926	60.3	1946	61.6
1927	54.5	1947	69.6
1928	48.7	1948	63.1
1929	49.7	1949	63.9
1930	48.9	1950	63.4
1931	48.6	1951	56.1
1932	46.7	1952	62.2
1933	51.5	1953	77.6
1934	63.8	1954	80.1
1935	53.2	1955	82.0
1936	60.5	1956	85.4
1937	55.2	1957	84.5
1938	54.4	1958	80.5
1939	54.7	1959	81.6
		1960	85.8

Table 2 — Number of Steers One Year and Older in the U.S. and 17 Western Range States, Expressed as a Percentage of Total Beef Cows, by Decades

Decade	Total U.S.	Total 17 Western States
1920	64 percent	50 percent
1930	52 percent	37 percent
1940	49 percent	30 percent
1950	38 percent	27 percent

Therefore, as the beef cow economy and present feeding methods persist, a relatively large supply of grain-fed cattle seems assured for the summer and fall months. Conversely, as the supply of older feeders continues on a more limited basis, relative price strength is likely to prevail during the winter and spring while these cattle are returning to market.

However, other factors will continue to bear on seasonal patterns of marketing and price fluctuations. Under one set of feed conditions, western range areas may elect to carry more calves into the yearling stocker size, thereby affecting the feeding pattern the first year by reducing the number of calves entering feedlots, and increasing the number of yearlings available the following year.

When range feed is less plentiful, especially for winter needs, young stock cattle will be sold off closer to the feed reserves, but attempts will be made to maintain the size of the cow herd. The condition of wheat pasture in the southern Great Plains can become an important factor in the price pattern both for feeders in the fall months and again in the spring when they move either to slaughter or to feedlot.

Under the surplus feed-grain conditions of recent years we will have to measure the effect of a possible feed shortage situation with attendant higher feed prices at some possible future date. The effects of variations in consumer demand and varying supplies of competing meats on beef prices may be more clearly defined in the future than at the present.

At any rate, they will continue to be factors in the cattle price structure and keep the cattle feeder guessing as to what next year's seasonal pattern of prices may be and what kind of feeder cattle to buy to be able to take advantage of the year's best prices.

"Psychoanalyzed" Chicks

"Psychoanalysis" has shown that the "mother-love" instinct which helps a chick to recognize its maternal parent and want to follow her around may not be a display of affection at all. It could be just an attraction toward almost any dominant object, according to a news article in the *New York Times*.

One theory suggests that chicks would follow the first object they saw move. To test this principle, a cardboard box was substituted for the mother of some newly hatched chicks, and as predicted, they began to trail behind the box and even preferred it to their real mother.

—*Poultry Digest*

Ewes Are Lazy Breeders

. . . but nature can be accelerated with worthwhile profit . . .

Condensed from Farmer & Stock-Breeder
D. M. Allan, Reading University Animal *Physiologist*

COMPARED with the sow, which may produce two litters a year with eight or more pigs reared from each litter, and the cow, which bears only one calf per year but becomes pregnant while still lactating, the ewe is lazy.

This limits the intensification of sheep farming. There appear to be two ways of altering the reproductive activity of the ewe, either of which may give a greater intensity of production. They are by increasing the lambing percentage; or by the induction of breeding activity at any time of year so that date of lambing could be controlled at will and so that ewes could be stimulated to produce more than one crop of lambs per year.

One of the most important factors governing the return from fat lamb production is the lambing percentage. Even with prolific ewes and good management it is difficult regularly to achieve lambing percentages in excess of 170-180.

Useful Increase

Artificial techniques may have some part to play here. If Pregnant Mare's Serum (P.M.S.) is injected into ewes two to five days before heat, there is an increase in the number of eggs shed from the ovaries at heat and the lambing percentage is increased.

In flocks of low inherent fertility the injection of 400-500 i.u. of P.M.S. can bring about useful increases in lambing percentage. On the other hand, in high-fertility flocks, larger doses of P.M.S. (600-700 i.u.) must be used if a response is to be obtained and the increased lambing percentage is due to an increase in the proportion of triplets, quads and quins. Unfortunately, the mortality of lambs in large litters is very high and much of the initial advantage may be lost.

The use of P.M.S. is limited in this case; but even in high-fertility flocks, records show that some ewes consistently produce singles and these can be injected with obvious advantages.

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Farmer & Stock-Breeder, Dorset House, Stamford Street, London, S. E. 1

Within Bounds

The cost of treatment is not prohibitive; the main problems are that teaser rams must be used to detect heat so that the correct stage of the oestrous cycle for injection can be determined, and good handling facilities must, of course, be available.

Sheep begin to breed as the days shorten and for most breeds the breeding season is evenly spaced on either side of the shortest day, beginning in September or October. This means that most lambs are born in spring with resultant fluctuations in the supply and price of lamb. Out-of-season breeding might be used simply to produce lambs outside the normal season or to produce more than one crop of lambs per year.

The Dorset Horn here in England has a naturally extended breeding season and is enjoying increasing popularity for out-of-season breeding. However, although the Dorset Horn will produce lambs outside the normal season, experience suggests that it is incapable of regularly producing two crops of lambs per year, and it may prove difficult to produce three crops in two years where mating is confined to limited periods in the autumn and spring.

Indeed, two crops of lambs in a single year may be an impossible aim, for with two pregnancies of 21 weeks each, only ten weeks of the year are available for getting ewes in lamb twice.

Attempts to use hormone injections to stimulate breeding activity outside the normal breeding season have met with varying success. An injection of P.-M.S. preceded by a series of three injections of progesterone has induced heat in both dry and lactating ewes. Results in dry ewes show some promise.

Where maiden ewes have been treated at 12 months of age, conception rates of over 60 per cent have been achieved, the ewes lambing in autumn and taking the ram again within a few weeks of lambing to produce a further crop in the spring. This appears to provide a useful method of obtaining an extra crop of lambs from ewes which are not sufficiently well grown to breed from in their first winter.

Dry Ewes

Further successes have resulted from the treatment of dry ewes in August, when it accelerates the onset of the breeding season and can be used to stimulate early lambings in breeds not naturally suited to this form of production.

However, where ewes have been treated soon after lambing in the spring, although a proportion show heat, very few become pregnant. The reason for this is not clear but it is probable that

blood and detritus remaining in the uterus from the previous parturition interfere with reproductive function. Results are improved if ewes are mated after two consecutive treatments with progesterone and P.M.S. but this involves a series of eight injections which is tedious and laborious.

Thus although hormone treatments may be used at present to stimulate out-of-season lambing, "two crops of lambs a year" is still a thing of the future.

Factors Affecting Growth Of Spring Lambs

Results of a study on the growth of spring lambs have been released by the University of Arkansas' Agricultural Experiment Station.

The type of rearing and the age of the dam were significant sources of variation in rate of preweaning growth of spring lambs. The effects of age of dam were different for inbred Hampshire ewes as compared to commercial ewes. Variation of weights at birth, at 60 days and at 120 days, along with the number of days required to reach 60 pounds were the factors evaluated in the study.

The study showed no significant differences in growth rate among the lines studied. Also, it showed significant difference in the weight of male and female lambs. A small decline in weights was associated with increased inbreeding.

About half of the ewes mated to a ram were from the same inbred line of Hampshire sheep as was the ram. The other half of the ewes were grade ewes purchased from the southwest range area of Texas and New Mexico.

Data used in the study were collected between 1952 and 1959.

It would seem from these data that the greatest increase in productivity to be expected from crossbreeding under conditions such as those in this study would be the result of increased fertility rather than from increased growth rate of lambs.

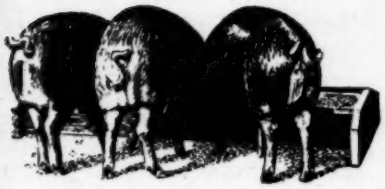
—Arkansas Agricultural Experiment Station

Develop Vacuum Bee Sweeper

Here's a new use for a vacuum sweeper. Benjamin Detroy, U. S. D. A. engineer, has built a vacuum sweeper to pick up bees which find their way into honey processing houses.

Such bees aren't welcome because they create a sanitation problem and bother the people who are processing the honey brought in for processing. Some bees also just wander in through open doors because honey processing buildings are often close to the hives.

Hottest Hog Issue In Years



Kill hogs at 160 to 170 pounds? .

Condensed from
The Progressive Farmer

C. G. Scruggs

THERE is mounting evidence that selling hogs at lighter weights could cure a lot of the American pork industry's ills.

This is what could happen if porkers were slaughtered at 160 to 170 pounds instead of the present 220 to 240:

- Numbers of hogs in U. S. could be increased 30% — 15 million.
- Consumers would get pork products they want.

These are only two of the exciting possibilities spotlighted by research by the animal husbandry departments of Louisiana State University and University of Kentucky. In comparing pork from hogs slaughtered at lighter weights (160 pounds) to those killed at heavy weights (220 to 240), they found that the consumer likes pork from the leaner, lighter hogs—even when heavier hogs are good, modern meat-types.

Here are the facts from the Louisiana State study, comparing hogs killed at 160 and 220 pounds:

1. Fatness in picnic, loin chops and loin blade roast cuts from 220 pounders was criticized twice as often by consumers as that from 160-pound hogs.

2. The greatest consumer criticism was that cuts were "too fat," even on lighter hogs.

3. Lighter hogs (160 pounds) had less back fat and greater muscle development (lean meat) per 100 pounds of carcass weight.

4. Lighter hogs, because of higher percentages of lean, desirable cuts and less fat trim, were worth $1.50 more per hundred live weight.

5. Average daily gain of hogs from 40 to 160 pounds was 1.52 pounds per day, compared to daily gains of 1.62 pounds per day when fed from 40 pounds to 220 pounds.

"People really grabbed the little hams—weighing 7 to 8 pounds—out of the meat counters," LSU Researcher A. M.

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Mullins said. He added, "Hogs must really have meat on them if they are to be slaughtered at 160 pounds. A little fat hog is just about as bad as a big fat hog."

This is the way facts lined up in University of Kentucky research:

1. Hogs weighing 160 pounds required significantly less feed per hundred pounds of gain at a lower price per pound of gain.

2. Packers estimated processing costs were 20% greater for hogs slaughtered under 175 pounds.

3. Retailers preferred smaller cuts from light hogs.

4. A significantly greater number of consumers considered cuts from heavier hogs *"too fat."*

5. Wholesale value per hundred pounds of live weight was greater for light hogs.

Certainly the idea should be discussed.

Corn Yield Jumps 11 Percent Over 1960 Levels

Late summer weather was favorable for crop production in almost all parts of the nation. Field crop yields per acre are at or near all-time record levels almost everywhere, except in the drought area of the far northern Great Plains.

The national average yield of corn is officially estimated at 60.4 bushels an acre. This is 11 percent greater than the previous record set just last year. The average corn yield for Illinois is listed at 76.0 bushels an acre. This average is 12 percent over the record set a year ago.

Farmers pushed hard on three yield-increasing practices to get high yields this year. They grew corn on their better fields, they planted more corn per acre and they applied more fertilizer.

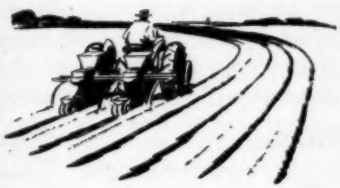
The Weather Man helped, too, of course. This is shown by the condition of pastures in the corn belt, which on September 1 was 16 percent better than the ten-year average for the date.

The exceptionally high yields of corn will aid government officials in their efforts to hold down corn prices in the 1961-62 marketing year. If the price of corn is kept too low, however, it will prevent the attainment of one of the goals of the Feed-grain program, which was to raise livestock prices. Illinois farmers get about 2½ times as much money from the sale of cattle and hogs as from the sale of corn.

The total production of the four feed grains—corn, oats, sorghum grain and barley—is estimated at 137 million tons, only 11 percent less than the record output in 1960.

—Illinois Farmer's Outlook Letter

What's Ahead In Crop Production Equipment?



New machines for corn planting, plowing, grass and legume seeding, cotton planting, and many more are here . . .

Condensed from Crops and Soils
Louis A. Liljedahl, Agricultural Engineering Research Division, U.S.D.A.

CROP production equipment has made great advances during the past 15 years. But, there is still a considerable gap between how new equipment performs and how we wish that it would perform.

This has led most machinery researchers into more basic studies, convinced that we won't make many more big advances until we know more about the needs of plants, as well as the characteristics of equipment.

Crop production equipment has "suffered" from early success, so that farmers and engineers have only recently become sufficiently dissatisfied with equipment to press for a more basic understanding of how the equipment works, and how it should work.

For years we have measured draft and power required by various tillage tools, but there has been no way to measure whether tools which took equal amounts of power did equally "good" jobs. A method has been developed recently for determining relative efficiency of tillage operations.

Tillage operations now are said to have done equally "good" jobs on the same soil if the resulting average clod sizes are the same. Then the work required for a certain operation can be compared with a "standard" amount of work required to produce an equal clod size.

This technique already has shown us that cutting the soil in narrow cuts is a more efficient means of tillage than taking wide cuts and then trying to break up the resulting large pieces into more uniform, smaller pieces.

Basic research on tires and tracks is beginning to give us better information on the efficiency of traction and transport equipment, and its effect on the soil. We've long assumed that because

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the air pressure was uniform inside a tire that the pressure on the soil surface must be fairly uniform as well. Newly developed measuring devices now show that the soil pressure is much higher on the sides and front of the tire "foot print" than in the center.

Perhaps this is caused by sidewall stiffness and the deflection pattern of the tire carcass. At any rate, engineers have found that tires built with the plys going directly around the carcass and the circumference of the tire have somewhat greater traction efficiency than tires built in the conventional way with the plys criss-crossing each other at a 45 degree angle to the circumference.

So if we wish to minimize soil compaction—get maximum pull for a given weight on the wheel —we must study tire construction, too!

Planting equipment is in much the same situation. Although work on precision planters some years ago failed to show much yield increase from such precision, interest is reviving because of the rapid increase in mechanical harvesting of vegetables. Machine harvest of vegetables requires uniform maturation and precision planting may help make this possible.

Several fairly new precision planters have become available in recent years, using perforated rubber belts, single seed cups, etc., and some research is being done on such equipment. However, most research on planting in recent years has concerned the seedbed requirements of crops.

Research as far apart as Michigan (on sugarbeets) and Texas (on range grasses) has shown that emergence is best if the soil *below* the seed level is firmed (with 5 to 10 pounds per square inch pressure) and soil above the seed is *less firm* (no more than 1 pound per square inch). This contrasts with the common practice of firming the entire area surrounding the seed by pressure on the surface.

This work is being aided by studies in North Carolina on the forces and energy required by a seedling to emerge from seedbeds prepared in various ways. Soil drying and temperature are other factors being studied, especially in dryland areas. New information such as this will enable engineers to design equipment which will tailor the seedbed requirements to the crop and climate.

A recent example of this is the plateau profile planter developed for cotton in Texas and Oklahoma. The crusting that normally occurred directly over the seed led to the design of a seedbed

shape that would be weakest immediately over the seed, yet permit water to enter the soil nearest the seed. This seedbed shape, plus use of the seed presswheel and soil temperature guides, has greatly improved cotton emergence in the Southern Plains.

We all know that much work has been done recently on wheeltrack planting and various other forms of minimum tillage. This has branched out in several directions such as plow then wheeltrack plant, plow then till-plant and plow-plant.

The good and bad features of these systems have been proved in several areas, but much more needs to be learned about their use in other areas of the U.S. as well as in other countries.

Actually, minimum tillage is related to other research on seedbeds and present practices are probably a stop-gap measure until the day when we know what the seedbed requirements are for various crops. Then we can develop tillage and planting equipment that produces the exact requirements of these crops.

The type of seedbed also may affect fertilizer placement. Research in Oklahoma shows that one type of fertilizer placement attachment may be more desirable than another, primarily because of the disturbance of the seedbed during fertilizer distribution.

Research continues to find new benefits for precise placement of starter fertilizers. In Michigan drilled small grains responded better to fertilizer placed below and to the side of the seed than the conventional method of surface broadcasting of fertilizer or placement with the seed. Preliminary studies indicate precision fertilizer placement on tomatoes can greatly increase the early yield which is usually the most valuable.

In the 1947-1949 period average wheel tractor production per year was 506,148. In 1960, 150,615 units were built. Although the number declined, total horsepower of tractors built and shipped remains at a fairly constant level.

Air delivery sprayers, developed originally for spraying fruit, are being used for a greater variety of purposes. They have been tested extensively on a number of vegetable crops, and are coming into wide use. Air delivery sprayers are now being tried on cotton where preliminary results are promising.

An important development in pest control equipment is the use of granular herbicides. Several applicators are now available, and use of granular chemicals is growing rapidly.

Granules work particularly well for some applications. For instance, applying insecticide in the corn whorl or applying any pesticide to the soil—especially where contact with growing plants is to be avoided—has proved most satisfactory. Granules also reduce to a minimum the problem of drift which is often important.

Pre-emergence chemicals will be used more widely and we will find that some of them will have to be mixed with the soil to be effective. There are many ways of doing this. A simple effective method developed in Mississippi consists of mounting spray nozzles on the back of a sharp, thick, horizontal V blade which goes through the soil 2 to 4 inches below the surface, followed by a gang of rotary hoes.

New developments in crop production equipment are many and varied. Private, state and federal organizations are continuing to work for easier, less expensive, and more dependable ways of producing crops to aid the farmer in his battle with the cost-price squeeze.

While practical developments continue to emerge, more and more work is going into basic research. In fact, more fundamental information will be necessary before equipment can be improved to any great degree.

Planting Good Seed Pays

Farmers should plant certified seed at least once every three to five years and then use care to avoid mixing with other varieties. Through the use of certified seed periodically, the farmer is certain of the crop variety, its purity and its freedom from other crop seeds and weed seeds. The small premium necessary to purchase certified seed is an investment which will pay dividends.

Wheat seed to be planted should also be cleaned and treated for best results. Cleaning will eliminate weed seeds and small berries which may result in lower germination or less seedling vigor. Proper seed treatment prevents stinking smut or bunt and helps control the bacterial and fungus diseases which may attack the seedlings. Treatment is especially important when low test weight seed is planted. Germination can be improved and seedlings will have a better chance to get off to a good start.

The quality of the crop harvested depends to a large degree upon the kind of seed planted. The planting of cleaned, treated, rye-free seed of a recommended variety will help assure the production of high quality wheat. —*Grain Improvement Notes*

Depreciation Can Bankrupt You

Here's how to live with it . . .

Fred Bailey, Jr.

Condensed from Successful Farming

THE moment you give the dealer the nod on that new tractor is the time to start figuring how—eventually—you're going to replace it!

The reason, of course, is that the moment you buy it, depreciation starts. "This business of depreciation can be real tricky," warns one noted economist. "It has led to bankruptcy and near-bankruptcy on more farms than the records ever show."

Consider this case of a farmer we'll call Mr. X. Like many another, Mr. X got swept up in the drive toward bigness and efficiency. Drawing from both savings and prospective earnings, he fought back at the cost-price squeeze by outfitting his farm with the latest in laborsaving machinery, buildings, and equipment. And he did it rapidly, plowing back profits until all debt was paid off. That's when the trouble started!

Simply put, Mr. X's highly capitalized farming plant began depreciating at a staggering clip, to the tune of nearly $7,000 a year. Since the depreciation expense wasn't an out-of-pocket expense, however, Mr. X allowed it to slip by almost unnoticed. He made no plans and set aside nothing from profits to eventually replace the depreciating assets. Thus, when the actual replacement problem finally did rear its head, it struck a hard financial blow.

While Mr. X is still in the business of farming, the years of overlooked depreciation have forced him heavily into debt and to scale down both his level of personal living and the size of his farming operation. But he's not alone.

Cold government statistics show what's happening. On an average farm, annual depreciation

Reprinted by permission from Successful Farming, Des Moines 3, Iowa

expense is a whopping 70% larger than it was 10 years ago. And in dollars and cents, depreciation currently accounts for 22c out of every dollar of farm expenses, compared to 15c in 1950.

One way many farmers cope with the problem of mounting depreciation, of course, is by a program of planned, systematic replacement. That is, replace one item this year, another next year, and so on. Thus, they manage to keep depreciation bills from "stacking up."

One of the hardest secrets for a man to keep is his opinion of himself.

But as illustrated by the example of Mr. X, who bought his equipment over a relatively short period, such a scheme of systematic replacement isn't always the answer. The kind, value, conditions, and age of equipment may not fit into such a neat pattern.

More and more economists suggest an annual checkup of your depreciation "account." Your income tax records provide all the information needed.

Handle it like a bank checking account. That is, how much did your farm assets depreciate during the year? These are your "withdrawals." How much did you spend on replacements during the year? These are your "deposits." (Be careful not to confuse assets bought for *expansion* with those bought for *replacement.*)

Then strike a "balance." In other words, figure the *difference* between the amount of depreciation and the amount spent for replacements.

If the depreciation figure is larger by any big margin, it's time for some hard financial planning. Don't forget, too, that a negative depreciation balance carries over from year to year and can build up fast—that was Mr. X's predicament.

An easy way to handle depreciation expenses on a pay-as-you-go basis is a *sinking fund.* It's simply a technique of setting aside so much money each year for each asset in order to accumulate the cash for replacement.

Populations of hog lice tend to build up in winter months when hogs are under cover and in contact with one another.

A basic sinking fund is shown below, worked out by Department of Agriculture economists. It shows how much to set aside in a savings account each year, depending on the interest rate earned, to replace a $100 asset at the end of a specified period.

For example: At 3% interest you would need to save $8.72 a

year to have $100 at the close of 10 years. To accumulate $1,000, obviously, you'd need to save 10 times $8.72—or $87.20 a year.

The sinking fund can be a useful planning guide even if you decide against actually socking away the cash in a savings account. For instance, if you find that you need to borrow money, it may be cheaper to use money slated for the sinking fund than to borrow from a commercial lender.

Remember, though, that any time you *don't* set aside money to cover the expense of depreciation, you are—in effect—borrowing from yourself. Like any other loan, it must eventually be repaid! Be as tough with yourself as your banker would.

Yrs.	2%	3%	4%	5%
1	$100.00	$100.00	$100.00	$100.00
2	49.50	49.26	49.02	48.78
3	32.68	32.35	32.03	31.72
4	24.26	23.90	23.55	23.20
5	19.22	18.84	18.46	18.10
6	15.85	15.46	15.08	14.70
7	13.45	13.05	12.66	12.28
8	11.65	11.25	10.85	10.47
9	10.25	9.84	9.45	9.07
10	9.13	8.72	8.33	7.95
15	5.78	5.38	4.99	4.63
20	4.12	3.72	3.35	3.02

Table above shows what you need to save per year—at various interest rates—to have $100 at end of a specified number of years.

New Book: Physiology of Reproduction and Artificial Insemination of Cattle

by Glenn W. Salisbury and Noland L. VanDemark

This volume of 630 pages brings together the pertinent literature of the past few decades for several groups of readers: cattlemen, artificial insemination technicians, and veterinarians; researchers and scientists in cattle reproduction and allied biological fields; practitioners of human medicine and related biology who are interested in the control of reproduction in other species.

Unprecedented in its complete record of developments in the science of animal reproduction and in its thorough presentation of the evidence for sound practices, this book will undoubtedly be an invaluable teaching aid for individuals of varying backgrounds, accomplishments, and aims.

170 illustrations are found in the text of this book. Although it is primarily concerned with cattle, a comparative approach is emphasized, wherever possible. It is published by W. H. Freeman and Company, 660 Market Street, San Francisco 4, California and may be purchased from them or your bookseller for $12.50.

A Checklist For Farm Management

Efficiency is the key word in farming today. You have to be efficient with land, labor, and capital to be a good manager . . .

Condensed from The National Future Farmer

Raymond Schuessler

TAKE a hard look at your present program. What are its weak spots? What expenses are being made that aren't paying off? In the light of costs and expected prices, what changes are needed?

The size of the farm, its soil quality, the weather, and your market outlets limit the earning power of your farm. But your ability as a manager is an important factor in how well you do. One good way to find your weaknesses as a manager is to keep records on your business and to compare them with selected standards of accomplishment.

There are some crop and livestock enterprises that are better suited than others to your region, your farm, your management, and your ability to carry risk. Few farmers are equally skilled with several enterprises. Your ability and skill with different enterprises may be the major factor in determining your farm plan.

Points you should consider in looking for weak spots in your business are shown in the following check sheet. Some of the questions may not apply to your farm. There may be others that you should consider. Although you can't give definite answers to some of them, you can find them useful in sizing up your farm as a unit. In other words, the answers may be what you think the situation is on your farm. Talk them over with other farmers and compare with them any changes that might be wise for you to make in your farming operation.

A Suggested Farm Management Check Sheet:

1. Do you have an adequate volume of business?

a) Do you employ more than 12 months of labor productively? Yes _____ No _____

(If less than 12, your business is probably too small.)

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b) Is there "room" in your sales for a satisfactory profit? Yes _____ No_____

Amount of your sales for last three year _____. Next year _____. (*List from income tax return or records.*)

c) Do you have enough resources to permit an efficient business? Yes _____ No _____

2. Do your crops fit the farm?

a) Is erosion under control? Yes _____ No _____

b) Are you able to keep up with the work? Yes _____ No _____

c) Are you growing high-profit crops that are suited to your farm? Yes _____ No _____

d) Are you maintaining or increasing the soil fertility? Yes _____ No _____

3. Are you producing crops efficiently?

a) Are your yields above those of similar farms in the neighborhood? Yes _____ No _____

b) Have you checked your fertilization rates? Yes _____ No _____

c) Is your drainage adequate? Yes _____ No _____

e) Do you try to use the latest proven production practices? Yes _____ No _____

4. Does your livestock fit the farm?

a) Can you keep up with the livestock work? Yes _____ No _____

b) Do your livestock add the business volume you need? Yes _____ No _____

c) Would more livestock increase your net income? Yes _____ No _____

d) Are your enterprises of an efficient size? Yes _____ No _____

5. Are you efficient with the livestock you have?

a) Are your production levels above those of similar farms in the neighborhood? Yes _____ No _____

b) Are your feed costs in line with good standards? Yes _____ No _____

c) Are you efficient with all classes? Yes _____ No _____

d) Do you produce high-quality products? Yes _____ No _____

One pound of uranium 237 will produce energy equal to 3 million pounds of coal.

6. Do you select and use machinery efficiently?

a) Are your machinery and equipment costs per acre in line? Yes _____ No _____

(*Add gas and oil, repairs, machinery depreciation, farm share of electricity, and machine hire, from income tax form. Divide*

by tillable acres. Check with good standards.)

b) Do you have enough machinery to keep up with your work? Yes ____ No ____

c) Are you well satisfied with the machines you have? Yes ____ No ____

d) Does expensive equipment that you own have enough annual use? Yes ____ No ____

7. Are your buildings adequate?

a) Are your buildings adequate for the present program? Yes ____ No ____

b) Are you making full use of them at present? Yes ____ No ____

c) Do your buildings allow labor and machinery to be used efficiently? Yes ____ No ____

d) Do you keep stored crops in good condition? Yes ____ No ____

8. Do you use your labor efficiently?

a) Are your labor costs per acre in line? Yes ____ No ____

(*Months of labor available, times monthly wage rate, divided by tillable acres. Check with good standards.*)

b) Are you kept busy at productive work? Yes ____ No ____

(*You can check your workload by obtaining appropriate standards for your area* 225 *to* 250 *days per man is a reasonable workload.*)

c) Are you timely with all operations? Yes ____ No ____

9. Do you need more capital?

a) Do you have adequate operating capital? Yes ____ No ____

b) Do you use credit when additional capital is needed in the business? Yes ____ No ____

10. Do you market your products effectively?

a) Do you plan to sell on the seasonally high markets? Yes ____ No ____

b) Do you produce high quality products? Yes ____ No ____

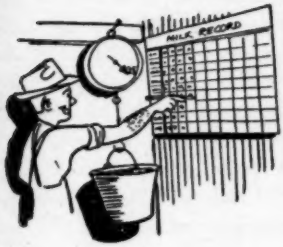
c) Have you carefully selected the best outlet or method of sale? Yes ____ No ____

Study carefully the problem areas indicated by a *No* answer. They *may* indicate leaks in your business.

Fertilizer Is Not 'Cure-All'

Fertilizer is the key which can unlock the power of the soil because it is an investment in greater profits and a more abundant living from the soil. However, fertilizer is not a "cure-all." Fertilizer must be used wisely or it can be wasted. This is the reason why farmers are urged to take the guesswork out of fertilization practices by having soil tests made.

"Corn Is My Cheapest Dairy Feed"



Records on this Michigan dairy farm show that corn costs less than roughage. And his 17,710 lb. average proves a high corn feeding program makes big production . .

Condensed from
Massey-Ferguson Farm Profit
Norman Reeder

CORN makes milk for less money than hay on Dolan Sweeney's farm in the thumb area of Michigan.

"Corn is my cheapest feed," this quiet-spoken dairyman told an audience of dairy farmers when he appeared on a Farmer's Week program.

Sweeney backed up his feeding ideas with records that showed an impressive average of 17,710 lbs. of milk for his 28 Holsteins, the highest in the state. And his butterfat average of 628 lbs. was second high in Michigan DHIA record books.

The regular daily ration for all cows in milk averages about 25 lbs. of corn silage, 20 to 25 lbs. of crush-cured, early-cut hay, and 20 to 22 lbs. of ground ear corn and oats plus protein supplement. Add in the corn from corn silage and the average daily grain consumed per head comes to 25 lbs. a day. Even dry cows get a liberal 10 lbs. of grain daily.

But what of the cost? Sweeney's DHIA summary answers that. His return for each $1 worth of feed was $3.04. His income over feed cost per cow was $478.

"We bought some ear corn for our hogs last fall for $25 a ton. It had quite a lot of excess moisture in it, but it was cheap at 1¼c a pound. We could have bought dry shelled corn for $40 a ton—2c a lb. Good hay, if you buy it, would cost from 1¼ to 1½ cents a lb. And it takes 3 lbs. of hay to furnish the digestible nutrients in 2 lbs. of shelled corn."

Sweeney is right about that. Morrison's Feeds and Feeding, shows that alfalfa cut at 1/10 to ½ bloom average 51.4% total digestible nutrients. No. 2 shelled corn runs 80% digestible nutrients.

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Massey-Ferguson Farm Profit, 710 North Plankinton, Milwaukee 3, Wisconsin

Sweeney's reasoning is exactly in line with some remarks made by Dr. C. A. Lassiter, head of the dairy department at Michigan State University. To illustrate the real cost of feeds for dairy cows at today's prices, Dr. Lassister displayed the following table:

Yield of TDN	Pounds per Acre	Cost per 100 lbs.
Alfalfa-brome hay	3,600	$2.00
Hay crop silage	4,000	1.92
Corn silage	6,000	1.25
Ear corn	4,000	1.51
Shelled corn	3,350	1.90
Oats grain	1,344	2.57

Dr. Lassiter based his calculations on average quality hay at $20 a ton compared with corn at prices paid to farmers at Michigan elevators last fall of about 85c a bushel on a 15.5% moisture basis. The cheapest feed in this list is corn silage, reflecting both the high yields of this crop and the extra nutrients in the stalks in addition to that in the grain.

Change feeding ideas: "Over the past ten years we have seen a substantial increase in corn yields, but little increase in the yields of meadow crops," the Michigan State dairy head pointed out. He thinks it is time we squared our thinking on cost of dairy feeds to meet facts of the 60's.

Michigan State dairy department recommends feeding dairy cows all the grain they will convert into milk at a profit. With high producers this is all they will eat. To show that high grain feeding tends to go right along with increased milk production and higher returns per cow, Dr. Don Hillman, extension dairyman at Michigan State, points to the following summary of DHIA records.

Pounds Milk	Grain per Cow	Feed Cost	Return above Feed	Return per $1 Feed
14,727	4,703	$201	$438	$3.18
12,689	3,785	170	357	3.10
10,229	2,910	156	269	2.73
7,345	2,154	135	157	2.16

When grain was doubled from 2,154 lbs. to 4,703 lbs., milk yield was doubled too. Return above feed cost was $281 more, even after the additional grain was figured in.

But high grain feeding will lead to trouble, many dairymen believe. Cows are built to handle a lot of roughage, not concentrate, they say.

Sweeney has been feeding all the grain his milking cows will clean up ever since he started dairying. His DHIA records go back 12 straight years. The lowest production he ever had was 13,633 lbs. of milk, 494.4 lbs. of butterfat per cow back in 1948. Since then his production has climbed year by year as he culled his herd and replaced the poorer cows with well bred heifers. For 10 of these years his herd has

been over 500 lbs. of butterfat, and the past 5 years his average has been well over 550 lbs. of butterfat per cow. This in spite of the fact that he dispersed his herd in 1958 and started over again with a bunch of mostly Canadian heifers with no production records behind them.

Any trouble he has had from high grain feeding hasn't been severe enough to cut back his milk production or his margin of profit. Both have been climbing steadily.

The big jump in Sweeney's herd production took place when he began to feed more corn.

"This is navy bean and sugar beet country," said this Thumb area farmer. "It has been only in the last 10 years that we have grown much corn. Now we are growing 65 acres a year on our 200-acre farm. We plan to grow more and feed it.

"The only reason we have been growing oats is to get seedlings and straw for bedding. I would just as soon feed all corn in the grain ration along with the necessary supplement to provide enough protein." With 3,000 lbs. of ear corn and 1,000 lbs. of oats ground together at the farm, he feeds about 250 lbs. of 30% protein supplement.

"We have even substituted corn silage and grain for pasture," Sweeney says. He now uses only 20 acres for pasture, feeds corn silage, hay and all the grain cows will eat every day of the year. "Production always goes down when we turn on pasture."

Sweeney's operation is a good example of the trend toward higher production per acre of land. Growing more high value crops is helping him step up production and net income.

Does A High Corn Ration Bring Disease Problems?

Many dairymen believe high corn feeding brings disease problems. Sweeney disagrees. "Anyone who blames mastitis, acetonemia or milk fever on high grain feeding should be looking for other causes."

Sweeney has had little trouble with mastitis and thinks that big comfort stalls help control it. A heating cable at the rear of each stall keeps concrete under udders at 65°.

Acetonemia is the biggest problem but dextrose injections keep it in check. Sweeney has had some trouble with milk fever, particularly in the fall. However, he doesn't think high grain feeding causes it.

Dipping the threads of a bolt into shellac before screwing on a nut will help retard rust formation and make removal of the nut easier.

FUN ON THE FARM

A Collection of Jokes and

Humorous Farm Stories

A farmer friend was trying to convince me that he could forecast the weather by looking at his cows. If they were lying down it was going to be clear. If they were on their feet and restless it was likely to rain.

When I pointed out that some of his cows were lying down and others were standing up . . . he explained, "Well, that just means it may rain and it may not."

—*Michigan Farmer*

★ ★ ★

Little granddaughter came in from the henhouse. "Grandma," she explained, "there aren't any eggs but the seats are all taken."

—*Holstein-Friesan World*

★ ★ ★

At the dairy show, a city fellow was admiring a prize-winning Jersey cow in the show ring. Presently, he asked the farmer leading the cow, "What's your cow's name?"

"It's Cynthia Rosebelle DeJerquine the Sixth of Susquenah Hill."

"Isn't that pretty long?"

"Mister," the farmer grinned, "when you play chambermaid for a bunch of milk cows, you've got lots of time for talk!" —*The Progressive Farmer* . .

★ ★ ★

Outside a veterinarian's office: "Hospital Zone—No Barking. —*Max Cone in the National Future Farmer* . .

★ ★ ★

The hero of the TV Western thriller had returned to his ranch and found that someone had burned his house to the ground. His faithful foreman had been shot dead, and his family had been kidnaped by the killers.

The hero dropped his hands to his gun belt, with its two six-shooters slung low at the hips. He stared coldly into the cameras and announced, "I'll get the rats who did this. But first. I want to sing you a little song." —*A. E. Downey in The Catholic Digest*

★ ★ ★

There were just as many careless drivers fifty years ago but the horses had more sense.

★ ★ ★

A mountaineer was sitting on a log with a worried look on his face. Upon seeing him, another mountaineer asked, "What's wrong?"

The first replied, "I lost my corn crop this year."

The second asked, "How did you do that? The bad weather? Fire? Insects?"

"Neither," said the first. "The dadburned revenuers." —*The Farm Spokesman*

★ ★ ★

Marriage is like sitting in a bathtub. After you get used to it, it ain't so hot.

★ ★ ★

"Are you the defendant in this case?"

"No, your Honor. I got a lawyer to do my defending. I'm the one who stole the chickens."

★ ★ ★

"About all I can say for the United States Senate up on the hill is that it opens with a prayer, and closes with an investigation." —*Will Rogers*

★ ★ ★

"Are your mother and father in?" asked the teacher when the small boy opened the door.

"They was in," said the boy. "But they is out."

"They was in—they is out!" exclaimed the teacher. "Where's your grammar?"

"Out in the kitchen," came the reply. —*Linda Anderson in Midland Cooperator*

★ ★ ★

A conference is a group of people discussing what they should be doing.

★ ★ ★

A farmer and a college professor were traveling together on a train. They got tired of talking and reading, so the professor suggested they play riddles. "Everytime you miss a riddle, you give me a dollar, and every time I miss a riddle, I'll give you a dollar," said the professor.

"You're better educated than I am," the farmer pointed out. "I'll give you fifty cents."

The professor agreed, and the farmer made up the first riddle. "What has three legs walking and two legs flying?" he asked.

The professor didn't know so he gave the farmer a dollar.

The farmer didn't know either, so he gave the professor fifty cents. —*The Lion*

★ ★ ★

Window placard in a New York pet shop: Lonely kitten desires position with little girl—will do light mousework. —*A. I. Digest*

★ ★ ★

When the farmer began his chores as usual on the morning of his 25th wedding anniversary, his chatterbox wife was extremely annoyed. "Don't you realize what day this is?" she demanded.

"Sure I do!" he retorted.

"Well, in that case," persisted the wife, "let's do something unusual."

The farmer meditated for a moment, and then suggested hopefully, "How about five minutes of complete silence?" —*Sunshine Magazine*

★ ★ ★

"Etc." is a sign used to make believe you know more than you do.

★ ★ ★

Sign outside a school:

SCHOOL ZONE — DON'T KILL A CHILD!

And underneath in a childish scrawl:

WAIT FOR A TEACHER.

★ ★ ★

"Jonas," ordered the farmer, "All the clocks in the house have run down. Wish you'd hitch up and ride down to the junction and find out what time it is."

Jonas replied, "But I ain't got a watch. Will you lend me one?"

"Watch? Watch? What do you want a watch for?", the farmer questions. "Write it down on a piece of paper." —*Contributed by E. Carlson, St. Paul 2, Minnesota*

★ ★ ★

There's no longer much prestige in being a two-car family unless it can boast a horse trailer and a boat trailer. —*The Chicago Tribune*

★ ★ ★

Nervous tension grew as the family listened to the small boy scratch away on his violin while the hound dog howled dismally nearby. Finally, in desperation, the father asked, "Please, son, can't you play something the dog doesn't know?" —*Michigan Farmer*

★ ★ ★

One of the troubles with our teenagers may be that they have grown up in a strapless age. — *The Cassville American*

★ ★ ★

The passengers on a new transcontinental airliner were settling in their seats when a voice came over the loudspeaker. "Welcome to Flight 407, non-stop to the coast. This is a recording. You are on a fully mechanized airplane. There is no pilot. Your take-off, flight and landing will be completely controlled by radar from the ground. There is nothing to worry about; you are completely safe. So, fasten your seat belt, relax and enjoy the trip. I repeat, you are quite safe. Nothing can go wrong . . . can go wrong . . . can go wron . . .**

★ ★ ★

A wife with plenty of horse sense never becomes a nag. — *Sharon Reporter*

★ ★ ★

The girl reporter was interviewing the man who was 104 years old. "And to what do you

credit your longevity?" she gushed.

"I don't exactly know—yet," the old-timer replied, "but I'm dickering with two medicine companies right now." —*Wisconsin REA News*

People are funny; they spend money they don't have, to buy things they don't need, to impress people they don't like. —*Western Livestock Journal*

One thing about the good old days — if you bought a horse you could be fairly sure that the next model wouldn't have the tail moved around in front. —*Malta, Mont., News*

★ ★ ★

Enraged because her husband had left his money to someone else, the widow went at once to the monument maker to have the inscription on his tombstone changed.

"Sorry," said the man, "but you ordered 'Rest in Peace' and it can't be changed."

"Well, then," returned the widow, "just add underneath 'Till We Meet Again." —*Implement & Tractor*

★ ★ ★

I read there are just as many telephones in the U. S. as there are bathtubs. What I can't figure out is, why does the former always ring when you're in the latter.

★ ★ ★

A girl from a big city, helping with a harvest, complained that a bull kept looking at her in a somewhat menacing manner.

"I expect," said the farmer, "that it's on account of that red frock you are wearing."

"Oh," said the girl, "I know its terribly out of fashion, but just fancy that — a country bull noticing it!" —*Arkansas Valley Journal*

★ ★ ★

"My wife thinks she should have a dish-washing machine," a husband told another.

"You're lucky," the other answered. "My wife thinks she married one."

★ ★ ★

One blistering hot day when they had guests for dinner, a mother asked her four-year-old son to say the blessing. "But, Mother, I don't know what to say." he protested.

"Oh, just say what you've heard me say," she told him.

Obediently he bowed his little head and said, "Oh, Lord, why did I invite those people here on a hot day like this?" —*The Poland China World*

★ ★ ★

Before I got married I had six theories about bringing up children. Now, I have six children and no theories.

★ ★ ★

The manager of the supermarket was so touched by the hard-

luck story of the man with all the children and no job that he filled a cart with groceries and said:

"These are on me; I hope they help."

Misty-eyed, the man started out, but turned around.

"Need something else?" the manager asked.

"How about my Green stamps?" the man asked. — *Weekly Rotary News*

★ ★ ★

The only wrestling matches that aren't fixed are those at drive-in movies.

★ ★ ★

The following was written with a wry smile to a woman who had asked President Lincoln for a sentiment and his autograph: "Dear Madam: When you write to a stranger for something which is of interest only to yourself, always enclose a stamp. There's your sentiment and here's your autograph. A. Lincoln".

★ ★ ★

The best place to find a helping hand is at the end of your arm!

Contributions for this page are welcome. Send your "Fun On The Farm" story to Farmer's Digest, Fort Atkinson, Wisconsin.

Keep Dairy Records

Generally, the cost of feeding dairy cows represents about one-half the total cost of producing milk.

By doubling his feed cost, a farmer has a fairly accurate measure of how much it is costing him to produce milk and what his profit is. For example, records may show cow "A" produces 9,000 pounds milk worth $450 at a feed cost of $190; while cow "B" produces 6,000 pounds milk worth $300 at a feed cost of $155.

Thus cow "A" returns a $70 profit while cow "B" is only paying her room and board.

No dairy farmer can feed correctly without records. A dairy cow can be fed in three ways. She can be underfed, overfed, or fed just right.

Without records, chances of feeding correctly are slim. Overfeeding runs up the feed bill and underfeeding causes loss in milk production. Records can be used the first month as a feeding guide.

Savings in feed alone often more than pay for the cost of records. The most expensive record-keeping system averages around 40 cents per cow per month. This is $4.80 per year. Saving only one-half pound of feed each day will pay for this. —*Royster's 1961 Almanac*

Alfalfa Still The Queen

She has been around a long time but still stands at the head of the line . . .

Condensed from American Livestock Journal

ALFALFA is as old as written records of man, but as modern as tomorrow in any feeding program.

It has been called the "queen" of the forage crops. It well deserves the title. Alfalfa ranks at the top in yield of quality protein, vitamins, especially A and D, and minerals.

Alfalfa can't be excelled as roughage for all kinds of livestock. It is unbeatable for beef cattle, tops for all ages and classes of beef animals.

In recent trials at the Irrigation Experiment Station at Prosser, Wash., yearlings fattened on alfalfa hay and corn-and-cob made excellent gains without a protein supplement.

Average daily gains of over 2.5 pounds were made for a 150-day feeding period. These cattle were marketed at about 950 pounds, grading U. S. Choice.

Alfalfa hay was fed at the rate of one pound of hay to two pounds of corn-and-cob meal. Average daily feed consumption at full feed was about 10 pounds of hay and 19 pounds of corn-and-cob meal.

For fattening cattle with limited amounts of grains the best results will usually be obtained if only alfalfa is fed the first half of the feeding period.

For breeding animals and stockers, alfalfa hay serves exceptionally well as the only wintering feed. This is a good practice if hay prices are low compared with other feeds. Mature beef cows will consume about 25 to 30 pounds of hay per day.

A closing note on feeding alfalfa hay. Your extra efforts last summer to make the best hay you could will pay off in the feedlot this winter. Those bales of bright green hay with the leaves still

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there are worth much more than the stemmy bleached hay we see around too many feed yards.

No other forage can offer all these uses and advantages:

●1. It can be grown alone, or in combination with grasses, as a high quality hay crop.

●2. It is adapted to either long or short rotations.

●3. It is widely used in combination with grasses for rotation pastures.

●4. It is grown alone for dehydrated products.

●5. It is best for green chop.

●6. It is an excellent green manure crop preceding corn.

●7. It withstands drought better than any other legumes.

●8. Its seedlings are vigorous and easily established.

●9. It adds a generous amount of nitrogen to the soil.

●10. The yields of alfalfa alone or with grasses are higher than other legumes under normal growing conditions.

●11. Nutritionally, alfalfa is the livestock farmers most nearly perfect feed package.

U. S. Farmers Set New Efficiency, Production Records

American farmers reached new high marks in efficiency of labor and total production last year, turning out 3 per cent more products with 3 per cent less labor than the year before.

One farm worker provided food, fiber and smoking for more than 26 persons (including himself) at home and abroad last year—two more than he was able to supply in 1959 and a dozen more than in 1949. —*U. S. D. A.*

Expensive Manure

Instant coffee . . . instant pudding . . . instant tea . . . and now, instant manure.

We chanced upon it recently at a restaurant, of all places. Neatly packaged in a colorful envelope, the half-ounce of dehydrated, well-rotted cow manure could be purchased for ten cents.

Now this prompted us to do some fast arithmetic which unfolded an idea worth a small fortune. This stuff was actually selling at the fantastic price of $6,400 per ton.

The manufacturer or, with all due respect to the cow, the processor wasn't without a brain. By mixing the half-ounce of manure with a gallon of water, he says, you get plenty for watering flowers, vegetables and small plants. No muss, no fuss, no unpleasant smell. Who said, "There's a sucker born every day!"?

—*Pennsylvania Farmer*

Farmers Must Learn To Pool Selling Power

An important step in a modern marketing system could help our fruit and vegetable farmers . . .

Condensed from Farm Bureau Mirror

K. R. Slamp, Pennsylvania State University

THE pattern of marketing farm products keeps changing.

Producing areas are not the same as 25 years ago; there is faster, more efficient transportation; the large chains have forced big business techniques.

The development of corporate and independent food chains has changed the pattern of marketing perishables from a more or less centralized system. This means that large retailers go directly to rural areas to obtain their needs.

This concentration of fewer buyers is a potent force making for bigger suppliers and bigger farms. Many canners, for example, have become backers for an integrated retailing program, except where they have been large enough to maintain a national or regional name of their own through consumer advertising.

Although cooperative and voluntary wholesale grocers have lagged in adopting corporate chain methods of handling perishables, the more progressive groups have constructed modern facilities to handle produce for their retail-members. Other voluntary groups have arranged for produce wholesalers to service their retailer-members and assist them in displaying techniques and merchandising programs. Increasing amounts of perishables are being bought directly by these firms in preference to obtaining the bulk of their needs in wholesale and terminal markets.

Large-scale organization of distribution is necessary to make an efficient national marketing pattern possible.

One aspect is direct buying of fruits and vegetables—whether

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Farm Bureau Mirror, Pennsylvania Farm Bureau Cooperative, Harrisburg, Pennsylvania

fresh or processed—in large uniform lots. Mass distribution does not lend itself to seeking small and varied lots of merchandise if retailers can obtain their supplies any other way. Growers and processors in other areas are apparently willing and able to supply them on their own terms.

Product diversification is increasing among national food processors. Some of these firms now are marketing more than 50 different products. For example, a major soup company has expanded from processing baked beans and soups by adding tomato juice, prepared dinners, and spaghetti products. Another company, originally a condiment and seasoning processor, has become one of the biggest potato processing firms.

Production generally will become more specialized and integrated. In the future it will approach the integration which continues in the distributive field. This can take the form of larger farms and orchards, further specialization of production, and combining of production and marketing agencies.

Operators of larger producing units are in a better position to take advantage of the economies of large-scale operation. They have easier access to such expensive equipment as mechanical harvesters, hydro-coolers, vacuum-coolers, automatic packaging machinery, pallet box handling equipment, and refrigerated storage.

A most recent development—pallet box transportation — shows promise of further savings. U.S. Department of Agriculture research indicates that only 1.6 man-hours are required to load, unload, and dump 36,700 pounds of apples in pallet boxes onto a packing line. To handle the same volume in conventional 40-pound boxes, 11.3 man-hours are required.

67% of all Americans are in bed by 11 p.m.—and 8% are not yet home.

Most growers are like the independent retailers. Alone, with very small volume, they can do little to meet the needs of today's distributors effectively. Farmers are learning that, like the independent retailer, they can and must pool their resources. Farmers are pooling their selling power, just as retailers are pooling their buying power.

In the long run, the economies of automation are passed on to consumers in the form of a continuing low price. The low prices eventually eliminate many of the smaller producers who are not in a position to apply automatic equipment economically.

Seen in this perspective, the fruit and vegetable industry

would seem to have at least two main adjustment alternatives.

Individual growers or groups might be able to maintain themselves through supplying the more or less personalized special markets that appreciate particular qualities — fresh crops or special varieties of local interest. Morning-picked sweet corn and tree-ripened peaches typify these commodities which can be sold through individual local distribution, roadside stands, farmers markets, store-to-door delivery and the like. Compared with total volume marketed, this will not likely be a large business, but might be fairly profitable for a limited number willing to build a particular clientele. Some processing business also might be possible on this basis.

Agriculture is industry's best customer. Farmers spend 25 to 26 billion dollars a year for goods and service to produce crops and livestock; another 15 billion dollars a year for the same things that city people buy.

A second alternative is the organizing of production and marketing of both fresh and processed perishables on a scale to meet the buying requirements of the larger distributors.

Some growers might become large enough to do this individually with certain crops. Some processors can meet these requirements if they are assured of grower supplies of raw products through contract arrangements.

Generally, this will mean the further development of effective cooperatives or more formal arrangements with sales and packaging specialists able to be strict on quantity and quality of offerings.

Contingent to this second alternative are such activities as bargaining and marketing agreements or orders. These are tools and not easy, painless cure-alls. A tool produces good results only if skillfully used. The experience in California is that bargaining and marketing agreements work well only if they are supported by strong cooperatives or other strong industry organizations. Only if there is aggressive leadership looking for, and pushing market opportunities will these tools work satisfactorily.

Advertising and promotion programs do not accomplish much unless the group that is advertising has something to offer and wishes to make good its claims. In other words, state agreements and orders or commodity merchandising and promotion programs can have something to offer if the growers involved are willing to pull together to make them work.

The future of the fruit and vegetable industry, fresh and processed, will depend on how well growers can identify the crops which have possible advantages, and whether they can learn to produce and market them efficiently in volumes and qualities tuned to market demands.

This will determine whether the industry will maintain its present position and expand, or whether it will continue to decline and become reduced to individual producers hanging onto a localized specialty market.

Worms and Diarrhea Gang Up On Pigs

Round worms and other parasites in pigs can pave the way for serious diarrhea and other infectious diseases. Round worms were given to healthy pigs by University of Wisconsin animal scientists to study the development of symptoms.

The round worms enter the small intestine and thread themselves into the lining. Lesions caused by these masses of "fastenings" result in enteritis—an inflammation of the intestinal wall.

The lesions or sore spots on the intestinal wall become handy entrance points for many bacteria, the research men explain. It's these bacteria which often cause other complicated swine diseases.

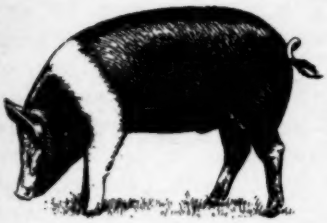
The researchers say a multiple experimental effect was produced when the pigs had both round worms and vibrionic dysentery, one kind of diarrhea, resulting in serious illnesses.

About 20 different species of parasite worms infect pigs. All of them can cause enteritis. Although the parasites may not cause any diseases themselves, many diseases follow once the worms are present.

Feed records kept on the experimental pigs showed feed utilization went down when the pigs became wormy.

Correction — Gentlemen: I call your attention to the article "You'll Profit From Beef Breeding Research" on page 47, October issue of The Farmer's Digest. Reference is made to an ultrasonic method of looking under an animal's hide on test at Colorado State University, Cornell University and the *Southwest Research Institute.* The reference should be to *Southwest Agricultural Institute;* one of the organizations which pioneered this very valuable tool and, by collecting information on over 2200 animals, established accuracy figures for its use generally accepted in the industry. In addition, with the assistance of physicists from Southwest Research Institute, Southwest Agricultural Institute has been able to develop an ultra-sound device specifically designed for animal study . . . Mr. Judd Morrow, Director, Southwest Agriculture Institute, San Antonio 6, Texas.

Roundup of Certification Standards



A handy reference for breeders of all major swine breeds . . .

Condensed from
National Hog Farmer

THE Meat Certification program is not just a program for purebred breeders. While it is the purebred breeders who submit hogs for slaughter under the program and who certify boars on the basis of those slaughter statistics, it is the commercial producer who ultimately benefits from this swine improvement program.

Certified Meat Sires and boars from Certified Litters have become available in large enough numbers during the past 2 years in all the breeds that commercial producers can begin to demand that the boars they buy have certification data behind them. They can look for, and find, boars in the breeds they prefer that are sired by Certified Meat Sires or are from Certified Litters.

But with the Certification program have come a number of variations of the basic program along with changes from time to time and an assortment of new terminology.

The following roundup of certification standards for all the major breeds is intended to provide the commercial producer with the information he needs to interpret the data on breeding stock and to understand the terminology used in the program.

The Meat Certification program grew out of a meeting in 1953 called by the National Association of Swine Records, the organization of purebred breed secretaries. Standards for the program were worked out at a later meeting by a committee.

The first standards set up minimums and maximums for length and backfat thickness as well as loin eye area minimums in three weight classifications and a weight for age requirement. The backfat standards were changed later but the other requirements remained the same until March of 1960 when all the carcass

Reprinted by permission from National Hog Farmer, Box 156, Grundy Center, Iowa

standards were revised by the Association of Swine Records.

These new standards became effective on all litters farrowed after Jan. 1, 1960.

In 1958 the American Landrace Association adopted a program with additional requirements to the standard program in use by the other major breeds. In 1959, the Hampshire Swine Registry adopted a Pacesetter program of higher standards as a supplement to the standard program.

With the revision of the standards for the basic program in 1960, the Landrace standards have been revised to conform with the basic program as have the Hampshire Pacesetter requirements.

Since the announcement of the new standards in 1960, several other breeds have added supplementary programs for their breed in addition to the standard program.

In addition, an on-farm performance testing program which combines feed conversions with growth rate and carcass data on a test lot fed out on the farm was developed in 1959 and has now been adopted by five breeds. It will be detailed later in this article.

The Hampshire Swine Registry also has a recommended program for on-farm testing for feed conversion. The program suggests efficiency testing from the time of weighing for Production Registry to 140 days of age. There are four variations of the program involving different test groups. Recommendations call for following through with slaughter of two littermates for checking against certification standards.

The Standard Certification program is as follows:

Certified Litters

The basic step in the program is the certification of a litter. The first requirement is that litters must meet Production Registry Requirements.

At least two pigs from a litter which has met PR requirements must be slaughtered at live weights of not more than 220 pounds. These pigs must each meet four requirements.

Ohio pasture research shows 2 years of continuous grazing kills most alfalfa plants. Rotation grazing of mixtures containing alfalfa is recommended.

1. They must weigh at least 200 pounds at 180 days of age. Adjustments are made in the case of pigs weighed on other than the 180th day.

2. Their carcasses must be at least 29 inches long measured from aitchbone to the front of the first rib. There is no maximum on length.

3. They must have not more than 1.6 inches of backfat. This measurement is the average of three measurements taken opposite the first rib, the last rib and the last lumbar vertebra. There are no minimums on backfat.

4. They must have at least 4 square inches of loin eye. This measurement is the area of the cross section of the loin eye muscle taken between the 10th and 11th rib.

Litters which meet the above requirements are designated as Certified Litters (CL) and all pigs from those litters are entitled to the designation CL in their pedigrees.

Any subsequent litters from the same mating which has produced a Certified Litter are also recognized as Certified Litters.

Certified Meat Sires

Any boar which sires five Certified Litters is eligible to be known as a Certified Meat Sire and the letters CMS are added to its pedigree.

However, the five litters must be out of five different sows, not more than two of which are full sisters or dam and daughter combination.

The programs and variations in use in each of the major breeds are as follows:

BREED CERTIFICATION PROGRAMS

	Slaughter Weight (Max.)	Loin Eye Sq. In. (Min.)	Length Inches (Min.)	Backfat Inches (Min.)
BERKSHIRE				
Standard Program	220	4	29	1.6
On-Farm Program (see description)				
CHESTER WHITE				
Standard Program	220	4	29	1.6
On-Farm Program (see description)				
DUROC				
Standard Program	220	4	29	1.6
On-Farm Program (see description)				
HAMPSHIRE				
Standard Program	220	4	29	1.6
Pacesetter Program	220	4.5	29.5	1.5

Pacesetter litters must meet Pacesetter Production Registry standards (see SIS Bulletin No. B8) and must weigh 220 pounds at 180 days. Sire of five Pacesetter litters recognized as Pacesetter Certified Sire (PCS).

LANDRACE

Certified Excellent Program	220	4	30	1.5

In addition the hams of the slaughter pigs must make up 18.5 per cent of the chilled carcass weight. Also the remainder of the litter must be weighed and probed with a total of six or more pigs making the weight for age standard and probing not more than 1.5 inches of backfat. Only pigs in the litter that meet these standards can be recognized as certified.

POLAND CHINA

Standard Program	220	4	29	1.6
Star Certified Litters	220	4.5	30	1.5

Weight for age requirement for star litters, 200 pounds in 165 days.
On-Farm Program (see description)

SPOTTED

Meat-type Litters				
(Standards which were in effect in most breeds until Jan. 1, 1960				
	180-200	3.5	28.5	1.6
	201-215	3.75	29	1.65
	216-230	4	29.5	1.7
Standard Program	220	4	29	1.6
Pacesetter Litter	220	4.5	29.5	1.5

Pacesetter litters must weigh 200 pounds adjusted to 165 days of age
On-Farm Program (see description)

TAMWORTH

Standard Program	220	4	29	1.6

YORKSHIRE

Standard Program	220	4	29	1.6

In addition, two other new variations of the certification program were announced in 1960.

The American Yorkshire Club announced that boars whose litters qualify for certification through a state testing station will receive special recognition. If two of the five certified litters credited to a Certified Sire have qualified through a state testing station the boar will be designated a one star Certified Meat Sire (*CMS). If all five certified litters qualify at a testing station the boar will be recognized as a two star CMS (**CMS).

The American Landrace Association has announced that sows that produce two or more certified litters will be recognized as Certified Meat Dams.

On-Farm Performance Program

The five breeds which have adopted this program are the Duroc, Poland China, Spot, Berkshire and Chester White.

Rules for the program require that the offspring of a sire may be placed on test if 50 per cent

or more (5 or more in the Spot breed) of the litters sired by him have qualified for Production Registry in that farrowing season.

Fifteen or more barrows and gilts from at least five different litters all by the same sire are placed on test when they are not less than 35 nor more than 60 days old and at an average weight of not more than 50 pounds.

The pigs are fed in a pen which contains not more than 50 square feet per pig. They must be self-fed a complete mixed ration.

The pigs must be weighed off test at an average weight of between 200 and 215 pounds and at least 10 (three-fourths of the test lot in Poland China and Duroc breeds) slaughtered and carcass data obtained.

The hogs slaughtered must average:

1. At least 29 inches in length.
2. Not more than 1.5 inches of backfat (1.55 in the Chester White program).
3. At least 4 square inches of loin eye.

In addition, the test lot must average 200 pounds or more at an average of not more than 165 days of age and must not have required more than 320 pounds of feed to make 100 pounds of gain.

If the test lot meets all the requirements, the sire of the pigs is recognized as a Superior Meat Sire (SMS).

For more detailed information on the program for a particular breed and for the necessary forms for qualifying pigs in that breed, write the swine registry association involved.

It appears that our worries about keeping peas from rolling off our forks are about over. Dr. William Hunter says that cube-shaped peas may be the answer. After devoting careful study to the problem, he comments that "cube-shaped peas are a practical possibility," and plans to begin experimentation in the near future.

—*Sunshine Magazine*

Thin, feeder type, or lightweight lambs have little slaughter value. Normally, a lamb which does well and is fed well will reach top market weight and grade by the time it is three to five months old. If they don't, worms and poor nutrition are usually the primary causes. It is not too late to worm them thoroughly with a good wormer, separate them from the ewes, feed them properly, and make good marketable lambs out of them. —*The Hormel Farmer*

Guide To Eggmanship

These are the factors which make up good "eggmanship" — before and after the egg is laid . . .

Condensed from The Country Guide

Don Baron in co-operation with *Professor H. L. Orr,* Poultry Department, Ontario Agricultural College

BEFORE EGG IS LAID

Breeding

●Select breed of hens carefully. The following factors vary among different strains of birds: quality and color of shell, interior quality, rate of deterioration of egg.

●Watch Random Sample Tests to see which breeds or strains score highest. Look for ones that produce eggs with desirable shell color, soundness and size, continuous high interior quality over prolonged heavy lay, and low incidence of meat spots.

Feeding

●Feed properly balanced diet —it will affect color of yolk (light or dark), interior and shell quality, and nutritional value of egg.

●Follow feeding program that is recommended to you by the feed manufacturer.

●If mixing home-grown grains with purchased concentrate, follow carefully the recommended mixing and feeding program.

Management

●Confine laying hens indoors. This practice is almost essential in today's farming.

●Housing must be properly insulated and ventilated, so birds will be warm and dry. Dripping walls and ceiling make damp litter.

●Keep litter dry for the health of your birds. and also for the cleanliness of birds and eggs.

●Slat or wire floors are satisfactory but more difficult to manage than conventional floors are.

●Provide an adequate number of nests for the size of the laying flock and keep nesting material clean.

Health

●Keep pullets healthy, rearing them either indoors or on range; or purchase only healthy started pullets.

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The Country Guide, 1760 Ellice Avenue, Winnipeg 12, Manitoba, Canada

●Respiratory diseases like infectious bronchitis affect egg size, the shape, and interior quality.

●Follow the drug manufacturer's instructions for disease control. Some drugs can damage egg quality.

Age

●Replace old layers with pullets. Young birds lay highest quality eggs. Slow continuous quality drop occurs during laying period. Eggs from older birds require even more careful handling.

●Force-molting does improve eggs' quality after many months of lay, and this improvement may be maintained for 6 months. But force-molting may only be justified under unusual short-term price and supply prospects.

AFTER EGG IS LAID

Gathering

●Gather eggs 3 or 4 times daily to reduce breakage, soiling, loss of interior quality.

●Sort out eggs that are to be washed, when gathering, unless all eggs are to be washed.

Chilling

●Chill promptly after gathering, or after washing, if eggs are to be washed immediately.

●Build a walk-in cooler for adequate chilling. Once built, install egg room cooler and humidifier.

●Maintain storage room temperatures at 50° to 55°F. and relative humidity of 75 to 85 per cent, until eggs are marketed. Eggs lose quality 3 to 4 times faster at room temperature than at 50°.

Cleaning

●Clean correctly to improve appearance, grade. Incorrect cleaning can lower quality, shorten keeping quality.

Except when they are sleeping, some species of birds eat every 10 minutes if food is available.

●Choose cleaning system carefully: (1) Damp cloth is too time-consuming except for small flocks. (2) Hand buffer leaves shiny spots. (3) Mechanical washers—immersion and brush types—are both satisfactory, if properly constructed and correctly used. They require accurate temperature controls.

●Wash immediately after gathering for greatest ease of cleaning. Next best—cool immediately after gathering and then clean within 48 hours.

Washing

●Keep egg washers clean by washing thoroughly after every day's use.

●Keep room clean where eggs are washed.

●Water temperature in immersion-type machines must be above that of eggs and from 100° to

120°F. It may be higher in brush-type machines.

●Control time of immersion—not over 4 minutes at 120°, not over 5 minutes at 100°F.

●Change water in immersion machines after 6 baskets of dirty eggs, and 8 to 10 baskets of unsorted eggs, to prevent contaminating eggs with bacteria and mold spores.

Packing

●Dry eggs thoroughly as they come from washer, then cool for several hours before packing. Mold and bacteria thrive in damp, warm conditions.

●Pack eggs in pre-cooled crates.

●Pack eggs large end up.

Marketing

●Market at least twice a week to ensure higher and more uniform quality.

●Insist that your grading station operator: co-operates with flockowners in a quality program; protects quality of your eggs by such means as refrigerated trucks, refrigerated holding, and oil sprays, if necessary; emphasizes quality in his selling program.

Calf Weaning Weights Should Be Adjusted

Weights of beef calves at weaning must be adjusted if they are to be a reliable guide to "doing-ability." These adjustments are for difference due to age of calf, age of dam, and sex of calf.

Only by making adjustments can a fair comparison be made between calves. For instance, a calf weaned and weighed at 200 days would be at a disadvantage compared to one weighed at 210 days unless the weights are adjusted.

The method of adjustment is quite simple. First, subtract the birth weight from actual weaning weight. Then divide by days of age at weaning. Finally, multiply by 210 and add birth weight.

A 400-pound calf at 200 days of age that weighed 80 pounds at birth would have an adjusted 210-day weaning weight of 416 pounds.

To further adjust for differences due the age of dam and sex of calf, the 210 day adjusted weight is multiplied by a factor worked out by animal husbandry researchers. A cow at seven years of age is considered to be at her prime to produce the heaviest calf, so the weights of calves from cows either younger or older than this must be adjusted to reflect this difference. Also, bull calves will normally be heavier than steers or heifers at weaning.

More details on making weaning weight adjustments can be obtained at county extension offices or by contacting your high school vocational agriculture instructor. —*University of Missouri*

Bee Farming

Successful commercial bee-keeping requires careful husbandry . . .

Condensed from The Journal
of Agriculture of Western Australia
R. S. Coleman, Agriculture Section,
Department of Agriculture, Western Australia

THE eye of the master fattens the cattle. One of the oldest farming proverbs, this is as true of bee-keeping as any other branch of farming. Careful husbandry is the basis of all successful bee-keeping; anything else is secondary.

Proper nutrition is the first requirement. Wherever possible the bees should be on a pollen and honey flow, and the hive never allowed to fall back in strength.

The hive field force must be kept "rolling" to maintain production. A hive with a full work force will get the most from any flow, but a colony which has been off a flow for three weeks will take up to three weeks before it completely recovers from the break in the brood raising. A hive which has been off a flow for six weeks or more will often take up to three months to become fully productive again.

The reason for this is to be found in the division of the labor force of the hive, and the reaction of bees to a period of dearth.

Their first reaction is to slow down the laying of the queen. This in turn means that six weeks from the time of the flow cutting out there will be a smaller number of bees emerging from their cells, progressively growing less as the number of nurse bees decreases.

A worker-bee has milk glands in her forehead with which to feed the larvae. When she first emerges from the cocoon, the young worker-bee cleans cells in preparation for the next batch of eggs, then starts to feed the older larvae with honey and pollen, progressively feeding the younger larvae as her milk glands mature. After about three weeks the young worker goes onto other duties.

After she has matured the worker can still feed the larvae, but less efficiently, so a colony with a smaller proportion of nurse bees cannot raise as many larvae as a well balanced hive. It

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Department of Agriculture, St. George's Terrace, Perth, Australia

is for this reason that any break in egg laying means the equivalent break in the nursing population a little more than three weeks later, and three weeks later still a decrease in the foraging population and a continuing effect from the lack of nurse bees showing up in the numbers of bees emerging.

All this means that the hives must be kept up in strength at all times, unless another flow is not likely for some time, or a continuing flow is not available at all.

The secret of success in commercial beekeeping is therefore to keep the bees on a pollen or honey flow consistently the whole year round if possible. A consistent pollen flow is more important than a consistent honey flow, for pollen is required to supply the proteins and other necessary food for the young growing bees.

It is more important to produce honey of any kind than only first grade honey. From this arise four subsidiary but still important factors.

1. Keep only young queens whose daughters have the genetic make-up to be prolific honey gatherers.

While it is necessary for the beekeeper to be able to breed his own replacement queens it is extremely doubtful at the present price of queens whether it is economically sound for him to produce his own queens rather than buy them from recognized and reliable queen breeders.

The queen breeder of good reputation is proud of his good name, and besides making sure that he sells only good queens he is constantly trying to improve his breed. Few honey producing bee farmers have the time to pay the same sort of attention to the quality of their breeding stock.

A refinement which helps the beekeeper produce more honey during the honey flow is to keep a number of nucleii always available to requeen hives which show any sign of failing. Any failing hive noticed during the extraction round and immediately reinforced with a nucleus containing a high producing young queen will on the next round be producing as well as any other in the apiary.

It takes some 800,000 tons of water to produce an acre of cotton.

2. The bee-keeper must have a thorough knowledge of honey and pollen flora.

The successful commercial beekeeper knows completely the potentialities of every honey plant within 100 miles radius of his home.

He must visit all possible sites every year to keep abreast of the

honey flow available, and to plan his moves.

3. Adequate mechanical equipment is essential.

His truck controls the number of hives the bee-keeper can run, and this is the most important item of his plant. It must be big enough to allow the apiary to be shifted quickly and efficiently.

The average bee-keeper working on his own can handle three loads of bees easily; four can still be handled but five become a poor proposition because by the time the last load is shifted the flow to which the bees are being moved has often been going for at least 15 days. If the distance shifted is over 250 miles—as is sometimes necessary—the flow can be going for up to 4 weeks before the last load is placed on it. It is then that bee-keepers tend to leave one or two loads of bees in the bush while they extract and care for the loads they have shifted. This not only wastes capital investment, but the bees left on the old site get down in strength and when they can be shifted are quite often no longer producing hives. Therefore a truck which can carry 120 hives is better than a smaller truck which is fully extended carrying 80 hives.

Most of the people in the world spend half of their income for food. In the United States, it is 21 per cent.

Adding to this is the shifting cost factor. One man with a small truck cannot comfortably handle more than 240 hives while one man with a larger truck could handle 350 hives.

The other major item is the extracting van. This should be designed to extract all hives in 10 working days. One man should be able to handle the van but it should still be convenient and efficient when used by two men during a heavy flow.

There are many different views on the layout of the interior of the extracting vans. Any bee-keeper should make himself familiar with as many extracting vans as possible before he builds or buys.

4. Material in the hives must be maintained at a high standard.

The combs are the most important. They must be kept in good condition and free of drone comb if the hive is to remain productive and at full strength. The drone combs should be weeded out at regular intervals. Any frame with more than 25 per cent drone cells should be melted down.

If the hives are kept constantly on a flow wax moth is not a worry; it becomes an active

threat only when the hive dies out and the colony is not inspected for some time.

All these factors make the successful bee farmer and each one is important; each one is needed to complete the whole commercial beekeeper.

Health Tips For Feeder Cattle

Improper buying, transporting and handling of feeder cattle not only affect the health of cattle, but slash the farmer's profits, according to University of Illinois veterinarians. Doctors J. R. Pickard and J. K. Winkler state that profits depend largely upon buying healthy feeder cattle and preventing sickness.

The veterinarians recommend buying healthy cattle just off the farm or ranch. Cattle that have been on the road or in the market for long periods may be weakened, exposed to disease and slow to get on feed. Also, calves showing nasal discharge, diarrhea or roughened haircoats may be unhealthy. They stress buying cattle of one origin. Research has proved that certain diseases run in certain herds. Thus the chance of introducing new diseases to your livestock increases when you buy from more than one herd.

The veterinarians feel that it is important to buy and move cattle during good weather so that the animals will not become chilled and susceptible to disease. Stresses caused by shipping can be avoided, they say, by preventing conditions that cause overcrowding, fatigue and disruption of watering and feeding habits. Trucks or cars used for shipping should be disinfected, and the areas where the animals are unloaded should be sanitary.

During the first two weeks the cattle are on the farm, they should be observed carefully and handled only when absolutely necessary. Because handling may cause excitement and further weakening, such operations as dehorning and castration should be postponed for at least two weeks.

If animals seem depressed, breathe rapidly and have diarrhea or nasal discharge, they should be isolated until a veterinarian can examine them.

The veterinarian can also give vaccinations for IBR or red nose, blackleg and malignant edema if these diseases exist in the area. Vaccination against leptospirosis may be necessary if the newly purchased animals have been exposed to carrier animals, including swine.

—University of Illinois

Chimney Smoke

by Irene Rudie

I would rather be able to appreciate the
things I cannot have
Than to have the things I am not able to
appreciate.

—Elbert Hubbard

★ ★ ★

Many are the ways of a woman and her houseplants. A neighbor who has unusually beautiful African violets stores rainwater for them in a barrel down cellar. She adds a teaspoon of commercial plant food to each gallon when watering. Another neighbor dumps all her breakfast egg shells into a gallon jar of well water. After a few days she uses the water for her sturdy, healthy houseplants of all kinds.

★ ★ ★

Are the fields iced with frosting after the first snowfall, or are they frosted with icing?

★ ★ ★

It's easier to make a pumpkin pie now, with canned pumpkins and prepared crust, but it was more fun for the children when the pie started with the pumpkin they brought in from the garden. In our house we even salvaged used Jack-'o-lanterns when the pumpkin crop was short.

A handy neighbor made an ugly, old, upright piano fit into the modern furnishings of the family's new living room by boxing it in with plywood, finished to match the furniture. Only the keyboard of the old piano showed, and the top and front were hinged as it had been. The space from the top of the piano to the ceiling was filled with bookshelves.

★ ★ ★

"Why Auntie, you're rich!" exclaimed a young niece from the city, "You have two dogs and six cats!"

★ ★ ★

A very old lady, setting her house in order, went through her old photographs and sent them all back to the donors or subjects. She sent me one I didn't have, a childhood picture I gave her when she was my teacher, a long time ago. Wasn't that a thoughtful thing to do?

Driving to town, I saw a neighbor walking along the road picking the bolls he found on dried goldenrods, and placing them in a bag slung over his shoulders. The little fat grubs inside the bolls will provide bait for winter fishing.

Sheep Breeding Tests Announced

How to improve the growth rate of lambs is of interest to sheep producers, and scientists at Virginia Polytechnic Institute are working on the problem. A long time research project was begun in 1955, according to Dr. R. C. Carter.

Carter says rapid growth from birth to market weight has been shown to be several times as important in fat lamb production as other characteristics. It is more important than body type or conformation. He notes a close association between growth rate and market or slaughter grade of the lamb. The faster growing lambs will usually grade higher at regular market weights.

In 1955, a foundation flock of purebred Hampshire ewes and rams was bought. A total of 68 ewes and 12 rams were purchased from 10 breeders in various parts of the U. S. An attempt was made to obtain diverse blood lines so as to have a maximum genetic variability in this flock.

In 1956, a carload of Hampshire X Rambouillet ewes was obtained. This flock is used as a test flock to progeny test young Hampshire rams to determine their breeding ability for growth rate. Each year 15 ram lambs produced in the purebred flock are progeny tested by breeding to 10 Hampshire X Rambouillet-Crossbred ewes each, in the test flock.

The following year the three rams whose progeny have the fastest average growth rate from birth to weaning are selected and used in the purebred flock as herd sires, replacing rams used the preceding year. To date four sets of rams have been progeny tested, Carter says.

These rams are selected only on the growth rate of lambs they sire. No other characteristic is considered except that animals with obvious defects are culled.

The researchers have found considerable difference in breeding value of progeny tested rams. In 1960-61, the fastest gaining progeny averaged .72 pounds daily gain, the lowest .59 pounds per day.

The average gains of the three fastest gaining progeny were .72, .69, and .66 pounds per day. Selection on the basis of the progeny test should be quite effective in improving the growth rate of lambs, according to the researcher. —*Virginia Extension*

How To Figure Shrinkage In Cattle

Shrinkage can affect your cattle profits. How much they will shrink depends on how they are handled and how far they must travel. Who stands the cost of lost weight? That should be taken into consideration in the price . . .

Condensed from Checkerboard Service

SHRINKAGE can take a lot of weight off a live animal . . . on the way to the feedlot or to market, while the carcass value remains the same.

How well you are able to figure and bargain for a price that takes shrinkage into account can affect your cattle profits.

Most of the shrinkage in cattle occurs during the first few hours after an animal has been taken off feed and water. It also varies with the distance traveled. Recent college research shows average shrink of feeder steers trucked for various lengths of time and distance as follows:

AVERAGE SHRINK OF HEREFORD FEEDER STEERS

Trucking time Hours	Distance Miles	Average Shrink %
8	211	3.9
16	390	6.1
24	600	6.6

Factors affecting shrinkage

Hot weather and high humidity cause excessive shrink. It has been shown that during the first nine hours of transit, fat cattle shrink more than feeder cattle. Beyond nine hours, the shrinkage for feeder cattle is greater. However, the net shrink—or the weight after the animals have had a chance to eat and drink—shows less difference.

How the cattle are managed before shipping also affects shrink. Overfilled critters, like stuffed humans, are uncomfortable. This discomfort brings nervousness, excessive pushing and crowding. Upon arrival these cattle are dirty, rough. and slow to take a fill. Most cattlemen feel that cattle kept off feed and water for at least four hours or even overnight travel best. Research has shown that cattle off dry range or hay shrink about 2% less than those coming off green pasture.

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Since the shrink varies from less than 1% to over 10%, you should check and keep records of shrink under your own conditions. If you know your own shrink experience, you will be in a better position to bargain with a cattle buyer who has to guess at the shrink your cattle will incur. Since you can never hope to match your total sales experience with that of a professional cattle buyer, the knowledge of shrink in your cattle will help you make the best sale.

Figuring "pencil" shrink

Many local sales are made on the basis of "pencil" shrink . . . an arbitrary percentage to reflect prices comparable with the quoted price of a terminal market. Here it is extremely important to compare prices that are equivalent when various real or pencil shrinkages are incurred.

The following table shows changes in price to compensate for different shrinkage:

Example: An asking price of $15 with no shrink is equivalent to $15.63 with 4% shrinkage.

Skill in marketing, long overlooked and neglected by many cattlemen, has made or broken quite a few. While there isn't much a feeder can do about cattle prices, the weighing condition of his cattle can usually be controlled and just allowance for shrinkage can be bargained for . . . providing the operator knows and fully understands the factors involved.

CHANGES IN PRICE TO COMPENSATE FOR DIFFERENT SHRINKAGE

Asking	2%	3%	4%	6%	8%
			(Dollars per cwt.)		
$15	$15.31	$15.46	$15.63	$15.96	$16.30
16	16.33	16.49	16.67	17.02	17.39
17	17.35	17.53	17.71	18.09	18.48
18	18.37	18.56	18.75	19.15	19.57
19	19.39	19.59	19.79	20.21	20.65
20	20.41	20.62	20.83	21.28	21.74
21	21.43	21.65	21.87	22.34	22.83
22	22.45	22.68	22.92	23.40	23.91
23	23.47	23.71	23.96	24.47	25.00
24	24.49	24.74	25.00	25.53	26.09
25	25.51	25.77	26.04	26.60	27.17

Soil testing is just as much a part of today's farming operation as a modern tractor, fertilizer, pesticide or an up-to-date records keeping system.

TRACTOR TALK

Bob Bargert

Engine Running Too Cool?

GOT a spark plug fouling problem on your tractor? Then maybe your engine is running *too cool.*

Most farmers go out of their way to prevent the engine from overheating, but often ignore underheating, which is just as important to good engine performance. For maximum efficiency and minimum engine wear, all tractor engines are designed to operate within a narrow range of coolant temperatures — usually somewhere between 160 and 180 degrees F.

The consequences of running the tractor at temperatures over 180 degrees, of course, are obvious — burned valves, warped heads, overheated spark plugs, etc. Not so obvious, however are the equally damaging effects which can result when the engine is consistantly operated below the 160 degree F. limit.

For example, too cool an operating temperature can result in poor vaporization of the fuel/air mixture after it leaves the carburetor. This causes raw unburned gasoline to run down the cylinder walls into the crankcase, diluting the oil. The diluted oil, of course, can't lubricate the engine properly and the result is more friction and greatly increased wear on the moving parts.

Another factor to consider is that the moving parts within the engine are designed to extremely fine tolerances with the expansion rate of each metal part taken into consideration in each of these measurements. If the parts don't reach the proper operating temperature, they don't expand the way the engine designer figured, which results in a sloppy fit, again increasing the wear rate.

In addition to contributing to crankcase dilution, an engine which is running too cold tends to condense moisture inside the crankcase. This moisture combines with other contaminants (carbon, dirt, metal particles, etc.) to form sludge, which cuts down on power, hinders lubrication and accelerates wear. While regular oil filter replacement will help to eliminate this, efficient cooling system care is a better solution.

Another major consequence of too cool an engine operating tem-

perature is the problem of spark plug fouling. Plugs are designed to operate within certain specific temperature limits. Should they be allowed to run too cool, (as might be the case if the engine is allowed to idle for fairly long periods) carbon deposits accumulate on the firing ends and the plugs will misfire — again wasting both fuel and power.

The usual cause of a cold running engine is a defective thermostat (or none at all). The purpose of the thermostat is to regulate coolant flow. When the engine is cold, the stat restricts water flow from the engine to the radiator until the engine warms up. Then, as engine temperature approaches normal, the stat opens, allowing the water to flow, thus keeping the engine from becoming too hot.

If the thermostat is stuck shut, it keeps the water from circulating — causing overheating. If it's stuck open (or removed), water flows too freely and engine temperature may never reach normal. Never operate a tractor without a thermostat!

Occasionally, forgetting to close the radiator shutters during cool weather operation will cause the engine to run too cool. Remember tractor engines are designed with an oversize cooling capacity to provide for hot-weather full-load operation. Operating with shutters open further increases the cooling system's ability to keep the engine cool — but conversely, the shutters also can prevent the engine from reaching the correct temperature if they are left open during cold weather operation.

"Cut The Costs Book . . ."

How to trim costs that cut farm profits is the subject of a newly-revised farm management bulletin now available from the U. S. Department of Agriculture.

This bulletin helps the farmer take a look at his present management plan to see its weak spots. It includes a check sheet to help track down the cost leaks. This check list, it was pointed out, should help with decisions on whether labor, machinery, and capital are being put to the best use.

A budget form also is included to help the farmer figure whether plans he is considering would pay off in terms of his needs.

For a free copy of "Cut the Costs That Cut Your Farm Profits", write the Office of Information, U. S. Department of Agriculture, Washington 25, D. C. Ask for Farmers' Bulletin 2108.

A New Yardstick – Dual-Grading

An up-to-the-minute report on the plan which promises more recognition to yields of valuable cuts . . .

Condensed from Livestock Breeder Journal

Eleanor Ferris, Agricultural Marketing Service, U.S.D.A.

IN LOS ANGELES, Knoxville, Denver, Kansas City—and in many other communities in all parts of the country—standardization specialists of the Livestock Division, Agricultural Marketing Service, for the past year have been demonstrating a new idea in beef grading.

The idea: "dual" grading—separate grades for the two main factors that determine the value of a beef carcass. These factors are (1) the quality, or palatability, of the lean meat and (2), the yield of trimmed retail cuts from the carcass.

Behind this idea is the fact that carcasses of the same quality grade can differ markedly in their yield of the most valuable retail cuts—those from the round, loin, rib, and chuck—which account for more than 80 percent of the value of a carcass.

The standardization specialists point out that "Differences in meat quality have traditionally been recognized in our marketing system, but differences in the yield of the most valuable cuts have not—for the very good reason that there has not previously been an efficient and reliable way of identifying these 'yield' differences."

" 'Dual' grading," they assert, "could supply the necessary yardstick for measuring these differences in yield and in value."

Before groups of cattlemen, marketing men, packers, and university students and researchers, these standardization specialists, who worked more than five years in developing the "dual" grading concept, are showing how it works.

At a recent demonstration, for example, they picked out two beef carcasses of the same weight and quality grade.

"One of these carcasses," they told their audience, "is worth $70 more to the retailer than the other one." Then they proceeded to prove that statement.

First they pointed out how they could predict the yield of trimmed boneless retail cuts from the round, loin, rib, and chuck.

"After studying more than

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1,000 beef carcasses," they said, "we now know we can predict the yield of these cuts quite accurately on the basis of only four factors: the thickness of the fat over the rib eye, the size of the rib eye muscle, the amount of kidney and pelvic fat, and the carcass weight."

Then to show exactly how their prediction of the yield of cuts compared with the actual yield, they had the carcasses cut up, boned, and trimmed of excess fat.

The resulting cuts and the waste fat and bone were weighed and these weights multiplied by their current price per pound. The closely trimmed boneless major cuts accounted for nearly 51 percent of the weight of the high-yielding carcass; for the lower-yielding carcass, these cuts accounted for less than 43 percent of the weight. Waste fat from the high-yielder was about 16½ percent of the carcass weight—while for the lowyielder it was nearly 27 percent! It wasn't hard to see the $70 difference in value.

This demonstration makes it plain that the amount of waste fat on a carcass has an important effect on the yield and on the value.

Time was when we consumed a lot of this fat along with the lean. But today the consumer wants his meat closely trimmed and the retailer obliges. So the amount of lean meat a carcass will yield, and the amount of fat that must be trimmed off, take on a new significance.

The U. S. grade standards for beef now in use provides grades based on a composite evaluation of quality and conformation. Although conformation does give some indication of yield of retail cuts, the present grades give no direct consideration to the amount of fat over the outside of a carcass—the most important factor affecting this yield.

Quality is judged on the basis of marbling, color, texture, and firmness of the lean meat in relation to the maturity of the animal from which it was produced.

Conformation is evaluated by considering such factors as the thickness of muscling and the relative development of the most valuable parts of the carcass, as opposed to those of lesser value.

The dairy industry is an important part of the economy of each of our 50 states and provides about 28 percent of the total foodstuffs consumed in this country.

These two evaluations (of quality and conformation) are then combined into a single grade such as Prime, Choice, Good, Standard, etc.

However, since quality and conformation are not perfectly correlated in most carcasses, some

compromise must be made in combining them into a single grade. And this makes the grades less precise than they could be were this compromise not necessary.

"Dual grading would eliminate this compromise approach to grading by giving separate grades to quality and to yield. Quality would still be judged as it is now on the basis of marbling, color, texture, firmness, and maturity. Conformation would not be considered in determining the quality grade. It would instead—at least insofar as conformation is indicated by the area of rib eye—become one of the four factors used in determining the yield grade:

You may get along fine on three square meals a day—but a dairy cow can get along better if the table is set more often.

1. thickness of fat over the rib eye;

2. the size of the rib eye muscle;

3. the amount of kidney and pelvic fat

4. carcass weight.

The idea now being discussed would employ the traditional grade names of Prime, Choice, Good, etc., to denote quality alone, while a numerical system would be used to designate yield grades.

In testing and demonstrating the "dual" grading plan, ten yield grades have been used, with No. 1 representing the highest yield and No. 10 the lowest. Each of these grades represents a 2.3 percent range in yield of the major boneless retail cuts.

Very few carcasses, however, have been found to fall into the four lowest-yielding grades, No. 7 to No. 10. And not many carcasses rate the highest grade, No. 1. Therefore, it seems likely that for practical use, the number of yield grades might be reduced to 5 or 6.

Most carcasses of any given quality, (Choice, for example), fall within a range of 3 to 4 yield grades. But within this range there is a significant difference in value.

In the higher quality grades—Prime, Choice, and Good—each one-percent increase in the yield of the major boneless cuts increases the retail sales value of the carcass by about $1.25 per hundredweight (1959-60 prices).

Thus, 600-pound carcasses that differed by only five percent in their yield of these cuts would have a value difference of $7.50 per hundred-weight, or $45.

The method they are demonstrating for determining carcass yields was developed by the Livestock Division's standardization,

specialists after years of studying, testing, and trying out various ideas. They have refined it now to the point that experienced meat men find it easy to use.

Federal meat graders who have tried out this new "yardstick" have been able to apply it accurately. And they have found that grading on this basis can be about as rapid as the present system.

One of the major advantages of the yield grades is that the factors used are concrete and not subject to great differences in interpretation. And though graders would apply them by "eye", they could actually be measured in case of dispute.

Can the yield grades be estimated in live animals? "Yes," say the standardization specialists, just as readily as can the present grades which are widely used by cattle buyers and sellers in trading on live cattle.

This has been proven in numerous demonstrations. They do it by grading live cattle for yield, then having them slaughtered and determining the carcass yield grades. The specialists' accuracy scores in these demonstrations have been impressive. They point out that cattle buyers should be able to do just as well—or better.

The standardization specialists worked out their method for assessing yield in the live animal in studies involving more than 500 live cattle.

These are the factors they have found that indicate a high yield: thick muscling over the back, bulging rounds, thin, smooth fat covering, trim brisket, and a firm finish.

This is the much sought "meat-type" steer, the thick-muscled kind which produces a high yield of superior quality meat without depositing a heavy layer of fat over the outside.

USDA officials feel that the "dual" grading system would encourage the production of the meat-type steer. For through such a system, this highly desirable animal can be given recognition—and, being recognized, paid for.

This, they contend, would be a forward step toward more efficient production and marketing of the nation's No. 1 food product—beef.

How well baby pigs start eating their first feed depends mostly on how it is presented to them.

When pigs start eating at two or three weeks, they usually have had feed which is always fresh and clean, and easily available to them. It's best to put out very small amounts of feed, and if it isn't used, replace it. Putting a little on a clean floor, or in a pan, will help a piglet use his rooting instinct to acquire a taste for the feed.

Protein and Profits In The Dung Heap?

This author tells of the proper feeding of minerals and the importance of minerals to maximum feed conversion . . .

Condensed from The Livestock Feeder
Paul W. Mattson, Agricultural Products Division, Morton Salt Company

SURVEYS of the mineral feeding practices of American livestock feeders indicate that millions of American cattle on feed are actually on diets that are borderline or deficient in both the major and trace minerals.

This is contrary to common popular impression! This over-all neglect and haphazard feeding of the essential minerals to cattle cost livestock feeders a substantial part of their annual incomes.

The most essential mineral for cattle is salt—sodium chloride. All life processes . . . digestion . . . respiration . . blood and circulation . . . require salt. Salt is a food. It is the most essential of all mineral elements needed by livestock. There is salt in every drop of blood, every pint of milk, every pound of meat, and every egg.

An animal's hunger for salt is just as keen as its hunger for feed and water. Without salt . . . supplied either in the feed or furnished separately . . . an animal would starve to death, even though eating its fill of ordinary feed. NOT ENOUGH SALT is a common cause of high feed costs and livestock feeding losses.

Faster gains and greater feed efficiency actually step up the requirements for minerals. Most emphatically there is an increase in the need for the basic minerals . . . salt—calcium—phosphorus—and the essential trace minerals . . . cobalt, iodine, iron, manganese, copper, and zinc.

Surveys among cattle feeders indicate the majority recognize the need for feeding supplemental major and trace minerals to their livestock. They feed trace mineralized salt and calcium and phosphorous mineral supplements on a "free choice" basis regularly. The majority of feeders feed hard blocks of trace mineralized (T-M) Salt on a "free choice"

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The Livestock Feeder, 401 Livestock Exchange Building, Omaha 7, Nebraska

basis—the minority feed loose trace mineralized salt in open mineral feeders.

A study of the PERFORMANCE PATTERN OF CATTLE confined on a feed lot clearly indicates that many (as high as 15%) of the cattle DO NOT PATRONIZE THE MINERAL FEEDER OR AVAIL THEMSELVES TO THE "FREE CHOICE" MINERALS IN THE FEED BUNK—they do not ingest sufficient trace mineralized salt daily to make the most efficient use of the feed they eat each day.

Cattle are like people—some are lazy—some are just plain stupid—and some simply don't care if they are doing a good job of feed conversion or not. There are the bullies that dominate the mineral feeder and the weaklings that stay away. Rather than depending on animals' behavior—on animals' dispositions to eat sufficient "Free Choice" T-M Salt each day for maximum feed conversion—nutritionists now recommend—and more and more cattle feeders are adopting a new "NO CHOICE" mineral feeding program for cattle on fattening/-finishing rations.

The "NO CHOICE" MINERAL FEEDING PROGRAM is simple — easy to adopt — and inexpensive. To put a "no choice" mineral feeding program into effect—to assure that every head on the lot ingests the minimum daily requirement of T-M Salt, merely add the salt to the daily ration. Scatter a short pound of trace mineralized salt (a pint is a pound the world around) over the load of silage, green chop, hay, or the natural feed for every ten head of cattle each day—a gallon of T-M Salt for every one-hundred head. In addition to the adding of salt to the daily ration on a "no choice" basis, still offer trace mineralized salt and a simple mineral supplement on a "free choice" basis,, as the salt and mineral requirements of cattle vary with the feed and the season of the year.

Examination of the trace mineralized salt content of the daily ration fed per head per day at several highly successful and profitable feed lot operations clearly indicate they are feeding higher-than-recommended levels of salt per head per day to their cattle

Farm workers now number seven million. Experts predict increasing efficiency of production will reduce this number to four million in the next 25 years.

In 1948, 92.2% of all farm tractors produced were under 35 HP and none over 50 HP. In 1960, only 17% were under 35 HP and the over 50 HP class accounted for 45.2% of the total.

. . . as much as 2.66 ounces of salt per head per day in the ration. The operators feeding higher-than-recommended levels of salt daily on a "no choice" basis report their incidence of urinary calculi has been reduced to a minimum.

State of Washington workers have observed that feed lot calculi are mostly of the calcium and magnesium phosphate variety. These results from feeding good quality legume hay rich in calcium. Later work of these research workers indicated a 5 per cent level of salt effective in reducing the number of afflicted animals.

At a recent 549-day feeding trial at the Kansas Agricultural Experiment Station on "trace mineralized salt for steers on pasture and feed lot", the average daily intake was approximately one ounce of T-M Salt per head per day. Montana Agricultural Experiment Station reports—after a three-year trial—that yearlings full-fed consumed an average of 1.3 ounces of salt per head daily, and while limited-fed the average daily salt consumption was 4.2 ounces. A difference in daily salt consumption was observed in two-year olds—2.1 ounces of salt per head per day when full-fed and a high of 7.1 ounces of salt when limited-fed.

Livestock researchers at other colleges report daily voluntary salt intake for beef cattle from a low of 0.93 ounces per head per day to as much as 1.92 ounces of salt per head per day.

In view of the wide difference in the amount of salt ingested by beef cattle per head per day in various livestock experiments as reported by agricultural college workers—plus the salt feeding experience of many feed lot operators—one can only conclude the daily need for salt by beef cattle on fattening finishing rations may fall anywhere between a safe minimum of 1 ounce of T-M Salt per head per day to as much as —say 3 ounces of trace mineralized salt per head per day—perhaps even higher amounts under certain feeding circumstances. No matter what level of trace mineralized salt one might recommend per head per day for a "NO CHOICE" mineral feeding program, there will always be those who will challenge that decision.

An estimated 200 million insects and mites may occur in the soil of an acre of rich pasture.

The recommendation of approximately 1.6 ounces of T-M Salt per head per day for a "no choice" mineral feeding program is considered to fall slightly above the minimum daily salt requirement and well below the daily

maximum need of cattle in some feeding circumstances. 1.6 ounces of trace mineralized salt per head per day was also selected for mathematical convenience—a tenth of a pound per head per day—one pound of T-M Salt for ten head—ten pounds for each one-hundred head—75 pounds per head for seven-hundred-and-fifty head, etc. The consensus of feeders is that the "NO CHOICE" T-M Salt feeding program is a simple one . . . it is easy to remember, as a "pint is a pound with the world around!"

Finally—and as a word of caution to all cattlemen—the adding of major and trace minerals to cattle feeds does not bless the ration with special nutritive ability — supplemental minerals cannot convert "poor feed" into "good feed"—nor can the feeding of minerals put a premium on shiftless feeding practices.

The proper feeding of minerals to cattle is not a substitute for good over-all management . . . however, it is the foundation on which a profitable livestock feeding program can be built. With feed being the highest single item of cost in beef production, maximum feed conversion is one of the major problems facing the industry today. Livestock nutritionists urge that cattle feeders and producers examine and carefully evaluate their mineral feeding habits and adopt a safe, complete and low-cost mineral feeding program for maximum feed conversion.

New Corn To Foil Blackbirds

Red-winged blackbirds, bronze grackles, and other flying foragers may be in for a big surprise the next time they try to plunder some Ohio cornfields. Corn breeders at Ohio Experiment Station are developing corn inbreds with husks so thick, long, and tough the birds can't strip them from the ear during roasting ear stage. However, the thick husks slow the fall drying which could make artificial drying a necessity.

One long-husk hybrid, "Experimental 5701," is available commercially. Produced in Licking county, Ohio, it is comparable in maturity to U. S. 13; has equalled 13's yield in tests at Columbus, Ohio. While use of the long-husk hybrid in areas of moderate red-winged blackbird concentration has shown good results, E. J. Dollinger of the station at Wooster, ackowledges, "This could be a matter of the blackbirds' preferring neighboring farmers' corn." —*The Furrow*

Are Your Herd Improvement Tools Sharp?

A number of dairymen are using a new type analysis in their herds as a guide in deciding which type of bulls to use. Over 6000 herds have been analyzed . . .

Condensed from Hoard's Dairyman

TEN years ago W. A. Weeks, a highly respected cowman and former official classifier for the Holstein-Friesian Association, embarked on a new venture. Following several years of extensive traveling and many farm visits, he observed that a number of dairy farmers were bitterly disappointed with their breeding results.

Most of these men had been enthusiastic about breeding good cattle and, in many cases, went to considerable time and effort selecting what they considered were the best bulls available. In other words, they bred the best to the best but the results were not what they had anticipated.

After studying the results of hundreds of these matings, Weeks concluded that the disappointments weren't due to the fact the bulls were inferior, but rather because they weren't properly mated.

The point is . . . there is no such thing as a perfect type bull or a perfect type cow. True, some are nearly perfect but they are a rarity. Should the bull have the same weakness as the cow, then that weakness would likely be very pronounced in the offspring.

Weeks decided that by making a different type analysis of individual cows and bulls in herds than had ever been made before, dairymen would be in a better position to select bulls and thus improve their herds.

His approach has been to use descriptive terms rather than measure type perfection. By use of these terms, he hoped to provide breeders with information which would help them to avoid piling up defects in their matings.

The idea has caught on to the point where Weeks now has 10 men associated with him who do this analysis work. To get more details on the aAa program, we

Reprinted by permission from Hoard's Dairyman, Fort Atkinson, Wisconsin

interviewed Bill Weeks recently. Our questions and his answers follow:

Why was such a program started?

There seemed to be a need for a program which considers the nature of the weaknesses of cows and herds as a basis for selective breeding. Knowledge and records of this sort are vital to successful breeding.

Is it primarily to assist the dairyman in selecting herd sires?

Yes. From the aAa analysis of his cows, the dairyman can select young bulls and sires in artificial breeding of the proper analysis to breed the herd; more specifically, bulls that are *strong for qualities needed most.*

Do the results of your program conflict in any way with that of the official classification program?

No. The purpose of classification is to reveal the extent of weaknesses while our analysis shows only the *Nature of them.* Neither program duplicates nor conflicts with the other in any way.

Do other than Holstein breeders use it?

Dairymen with all breeds have used our services.

Do grade as well as purebred dairymen use your program?

Yes.

What, if any, changes have been made in the program since its inception?

Long detailed listing of weaknesses has given way to abbreviated forms for greater accuracy and simplicity.

Skim milk continues to gain favor. Sales so far this year are 9% above a year ago, though whole milk sales are down 1% and cream is off 3%. Consumers switch to skim milk to help trim their waist lines, dairy officials say.

Please describe the program in detail.

Cows and bulls are analyzed for herd owners on application. Animals are divided into three general areas for consideration, namely:

1. Front end
2. Udder
3. Rear end

An abbreviation "R" or "S" is given to the character of each part. Thus, any animal will be analyzed one of the following types: RRR, RRS, RSR, SRR, RSS, SRS, SSR, or SSS.

About 60 different characters are considered in each of the "R" and "S" groups.

Some of the "round" ones are:

Wide muzzle
Wide chest
Long body
Short teats
Meaty udder
Long rump
High tailhead
Shallow heel
Straight legs
Weak pasterns and tendons

Examples of "sharp" characters are:

Long head	Fine udder texture
Narrow chest	Long teats
Prominent vertebrae	Clean-cut thigh
Flat rib bone	Long feet
Arched flank	Flinty leg bone
Wide pin bones	Neat tail setting

Care is taken to place importance on characters related to production, health, and appearance, in that order. Analysis ratings are furnished only to the owner of the animal.

What is left with the dairyman?

A chart showing the analysis of each cow, with space to enter analysis of available bulls he may wish to use. The chart indicates which bulls can be expected to sire the best offspring from each cow.

Are many of the artificial breeding studs having their bulls analyzed?

Yes, about 30 of the studs are.

Should dairymen take into consideration the entire pedigree, including production records?

Yes, a bull should have the best you can find of everything, including records, pedigree, type, in addition to being the proper analysis for the cows to be bred.

At what age can animals be analyzed?

Bulls any age; with females it's preferable to wait until they are 10 months old because of the changes that occur during growth.

How long does it take to analyze a herd?

Usually, we analyze about 20 cows per hour, plus visiting time.

Does it require more than one visit per herd?

No, each year only the new animals need to be analyzed.

Does the analysis change in animals from year to year?

In about 3 per cent of them.

How many herds have been analyzed?

More than 6,000 herds, including more than 160,000 head.

Are herds fairly uniform in type?

Herds in general are very uniform. The very dairylike cow with shapely udder and straight top line predominates. Problems such as lack of size, over-refinement, meaty udders, breeding and calving difficulties, and puffy legs are on the increase. Unfortunately, the sources of large, wide cattle needed to correct these difficulties are rather limited.

Crop production is 56% higher than it was 40 years ago; output per breeding animal 81% greater.

Do dairymen possess much information on breeding and selection?

No, much of the information available to dairymen is ballyhoo and propaganda material result-

ing from highly competitive sire promotion. Many herds are being bred with high hopes but are reaping unsatisfactory crops of 2-year-old heifers.

Do cattle usually breed "true"?

Cattle do breed "true" when full knowledge of pedigree and analysis are known and considered.

A study has been made by South Dakota State College dairy scientists in connection with your analysis program. Are there any conclusions that can be drawn from the study as yet?

This study revealed a "highly significant" increase in production, improvement of type, more aggressive feeding and faster, more complete milking resulted from matings made in accordance with "round" and "sharp" analysis.

Tractors Change Story of U. S. Farming

Modern tractors are responsible for a major share of the tremendous increase in farmer efficiency in recent years.

A glance at data, compiled by USDA agricultural economists, tells the story of rapid, efficient mechanization on U.S. farms.

There were 5,160,000 tractors on our farms in 1959—a net increase of almost 2.7 million since 1945.

The biggest percentage increase was in garden tractors with less than 9-belt horsepower and drawbar capacity for one 12-inch plow. In 1941, there were about 10,000 on farms. This number exceeded 400,000 in 1959 and comprised 8 per cent of the total on farms that year.

Tractors today are lighter in weight. In 1958, tractors with 22-drawbar horsepower had one-third the weight of similar horsepower tractors 50 years ago. Of wheel tractors in 1947, about 70 per cent were classified as general-purpose machines. Approximately 90 per cent of them were of this type in 1958.

In 1959, more than a third of wheel tractors produced burned diesel fuel or LP gas. As recently as 1950, however, gasoline-powered tractors made up about 90 per cent of the wheel tractors on farms.

How long do tractors last? The ARS study of 1927 to 1956 statistics indicates that their useful life averages 16 years. About two-thirds of the wheel tractors on farms in 1956 were less than 10 years old. Their average age was 9 years.

—New Mexico Extension News

Plastic-Coated Fertilizer ?

Report on an interesting fertilizer experiment . . .

Condensed from What's New In Farm Science?

YOU may be using plastic-coated fertilizer capsules on some crops in the future.

Research at the University of Wisconsin suggests this may be a way to spread fertilizer effects over a longer time—supplying nutrients as they are needed throughout the season, rather than a surplus of nutrients soon after fertilizing and a shortage later in the season.

Actually, the first crop on a field uses only 10% to 20% of the phosphorus and 40% to 70% of the nitrogen and potassium you put on as fertilizer. That part of the fertilizer which isn't used is only partly available to succeeding crops.

Nitrogen Is Lost

Much of the nitrogen is leached away, and some is used by soil bacteria. Potassium also is soluble in rainwater and is thus removed in the drainage from the soil. Phosphorus combines with other minerals in the soil to form insoluble compounds that make the phosphorus unavailable to plants.

Soil scientists have long tried to find natural fertilizing materials which release their nutrients slowly.

But in tests last year, W. C. Dahnke, O. J. Attoe, and L. E. Engelbert tried wax coating and polyethylene plastic coatings to slow down the release of plant nutrients from the fertilizer.

Plastic "Bags"

They put ¼ to ½ teaspoon of complete fertilizer on a two-inch square piece of plastic film, wrapped the film over and sealed it with heat. Then they made a few pinholes in the film so water could get in to dissolve the fertilizer particles. These plastic covered packages were used to fertilize small areas of bluegrass.

They prepared wax-coated fertilizer by mixing ammonium sulfate crystals with melted wax or paraffin, then pressing the mixture into pills about ⅜ inch in diameter and ⅜ inch long. These pellets were used to fertilize soil in cans which were then planted to corn.

Reprinted from What's New In Farm Science?, Agricultural Experiment Station, University of Wisconsin, Madison 6, Wisconsin

No Yield Increase

Neither procedure gave increased yields over regular fertilizer of a similar makeup. However, the wax coating did result in better recovery of applied nitrogen by the crop. The corn took up 65% of the regular fertilizer applied, compared to 81% for fertilizer pelleted with micro-crystalline wax.

Most important, the researchers say, is that the plastic-coated fertilizer gave a much more uniform growth of grass throughout the season. And there's a good explanation for the failure to increase grass yield or nutrient uptake. The phosphate probably wasn't released as rapidly as it should have been for best growth. The research men think they can overcome this difficulty by using the proper carriers for the plant nutrients in the fertilizer.

Process Not Practical Yet

Of course, the process of plastic-coating used in these experiments is not as yet practical for fertilizer manufacturers. Mechanical details would have to be worked out and tested. But the first step is to find out whether such a procedure would be of value. This too, isn't definite yet, but the possibilities are good, the research men say. Controlled release of the nutrients could be highly valuable in fertilizing grass for pastures, lawns, and golf courses.

How Much Fertility Leaves A Farm?

Every time a crop is marketed, a lot of fertility leaves the farm. Here's how it all adds up, according to the National Plant Food Institute:

A 100-bushel corn crop, including stover will take from your soil 150 pounds of nitrogen, 60 pounds of phosphate and 100 pounds of potash per acre.

A 40-bushel wheat crop will remove 66 pounds of nitrogen, 26½ pounds of phosphate and 40 pounds of potash per acre.

Three tons of alfalfa will use 140 pounds of nitrogen, 35 pounds of phosphate and 135 pounds of potash.

Fifty bushels of oats plus the straw will drain off 50 pounds of nitrogen, 20 pounds of phosphate and 45 pounds of potash.

This drain of nutrient reserves can mean a sizable deficit in fertility each year unless you balance these withdrawals by deposits in the form of commercial fertilizer based on soil tests.

—Cyanagrams

ONE YEAR CONTINUING INDEX

BEEF CATTLE

Crooked Calf Disease .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Guide for Cow Culling .....Dec. 1960
Water Belly, Steer Killer .....Dec. 1960
Will You Breed By Blood Type ....Dec. 1960
How To Handle The "Downer" ....Dec. 1960
Snorter Dwarfs With Us .....Dec. 1960
Why Keep Beef Herd .....Jan. 1961
Pays To Study Cattle Cycles .....Jan. 1961
Cross My Cows With Charollais ....Jan. 1961
Future of Beef .....Jan. 1961
Feeders Getting Enough Protein?....Feb. 1961
Dwarfism In Beef Cattle.....Feb. 1961
Records for Commercial Cattle ...March 1961
Making Beef Cattle Pay .....March 1961
Pelleting Feeds for Cattle .....April 1961
The Cow, A Calf Factory .....May 1961
Select Meat Type Steers .....May 1961
Crossbreds In Today's Farming ....July 1961
What's In A Head .....July 1961
Cattle Feeding Is Changing .....July 1961
"Disease Free" Cattle Next .....Sept. 1961
Tools, Make Money Beef .....Sept. 1961
Charollais, Butchers Joy .....Sept. 1961
Beef Profit Picture .....Oct. 1961
Profit From Beef Research .....Oct. 1961

CONSERVATION AND TREE FARMING

Watersheds Show Stuff .....Dec. 1960
Brush Control .....Jan. 1961
Manage Woodlot For Income.....Feb. 1961
Establishing Grass Waterways ....April 1961
Farm Woodlots for Timber, Wildlife May 1961
How Terracing Pays .....Oct. 1961

CROPS

Fertilizer Wheat Plot Tests .....Dec. 1960
Farming Without Soil .....Jan. 1961
Nitrogen, Continuous Corn .....Jan. 1961
Nitrogen, Key to Continuous Corn .Jan. 1961
Heard About Single X Corn .....Jan. 1961
Federal Seed Law .....Jan. 1961
I'll Grow Corn, You Feed Pigs .....Jan. 1961
Seed Treating Chemicals.....Feb. 1961
Stretch Your Seed Dollar .....April 1961
What's Ahead for Corn .....April 1961
What About Continuous Corn .....April 1961
Deep Planting Cuts Yields .....April 1961
Strip Processing, Shortcut .....April 1961
Mix Hybrids to Outwit Weather ...April 1961
Which Hybrid Best? .....April 1961
Plant Corn Solid .....April 1961
Preparing for Corn .....April 1961
Report on Dwarf Corn .....April 1961
Corn Production Tips .....April 1961
Rocket To High Yields .....April 1961
Minimum Tillage .....April 1961
What Is Quality Cotton? .....July 1961
Ways Make Corn Worth More ....Sept. 1961
Inoculation Still Pays Big .....Oct. 1961
Music For Plants .....Oct. 1961

DAIRY CATTLE

Handle The "Downer" .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Guide for Cow Culling .....Dec. 1960
Will You Breed By Blood Type ....Dec. 1960
Beat Mastitis Without Medication ..Dec. 1960
Milk Withholding Time .....Jan. 1961
Yardstick for Dairy Mgt. .....Jan. 1961
Cross My Cows With Charollais ....Jan. 1961
How Much Milk Will She Produce ..Jan. 1961
Should I Go Bulk?.....Feb. 1961
Dairymen Work So Hard?.....Feb. 1961
How Much Milk by 1970?.....Feb. 1961
Cost To Produce Milk.....Feb. 1961
Reducing Costs in Dairying.....Feb. 1961
Change Gradually to Pasture ....March 1961
Liquid Meters for Milk .....March 1961
To Earth on Dairy Goals .....March 1961
New Test For Milk .....March 1961
Do Right By Our Cows .....April 1961
Silage in Dairy Ration .....April 1961
Dairying Demands Greater Skills ..May 1961
Cut Dairy Feed Costs 20% .....May 1961
Cowsheds vs. Parlors .....May 1961
Which Cows Best Producers .....July 1961
Calf Raising .....July 1961
Herd Size and Conception Rate ....July 1961
Change From Fats To Solids .....July 1961
Select Right Foundation Cows .....July 1961
Crossbreds Top Dairy Producers ....July 1961
Minerals Are A Must .....July 1961
Dairy Cows 1970 Model .....Sept. 1961
Six Steps Better Breeding .....Sept. 1961
Fast Ways Boost Dairy Profits ....Sept. 1961
Little Known Facts Cow Behavior ..Oct. 1961
Herd Larger, Chores Easier .....Oct. 1961

FARM BUILDINGS AND EQUIPMENT

More Asphalt Barnyards .....Jan. 1961
Livestock Equipment Plans .....March 1961
Should You Rent Equipment? ....March 1961
Farm Tools Great Inventions .....March 1961
Barn Need Remodeling .....July 1961
How To Select Diesel Fuel .....July 1961
Manure Gas Runs Equipment .....Sept. 1961
Your Farm Thirsty? .....Sept. 1961
Features For Feedlot Design .....Oct. 1961

FARM MANAGEMENT

Solve Problems in Six Steps .....Dec. 1960
What's Ahead for '61 .....Jan. 1961
Plan Spending, Saving, Borrowing ..Jan. 1961
I'll Grow Corn, You Feed Pigs .....Jan. 1961
Where Stands Today's Farmer.....Feb. 1961
How Farmers Gain Capital.....Feb. 1961
Zoning To Protect Agriculture.....Feb. 1961
Are You A Good Credit Risk?.....Feb. 1961
Barn Lot Economics.....Feb. 1961
High Yields Begin on Paper .....March 1961
Farm Management Tips .....March 1961
How To Tell New Idea Will Pay ...May 1961
Farm Work Time Table .....May 1961
Are You Getting 20% Crop Bonus? May 1961
More Marketing By Farmer .....July 1961
Use Farm Price Indexes .....July 1961
If New Highways Hack Your Farm .July 1961
Farm Management Tips .....Sept. 1961
Boost Farm Size, Make Money? ...Oct. 1961
Public Relations No. 1 Job .....Oct. 1961
Price and Profit Prospects .....Oct. 1961
Establish Farm Credit Rating .....Oct. 1961

FARM EQUIPMENT & MACHINERY

Importance of Barn Ventilation ....Dec. 1960
Costs Owning Farm Trucks .....Jan. 1961
Will Machines Control Farm Size....Feb. 1961
Tractor Features Farmers Like.....Feb. 1961
Calibrating Your Sprayer .....April 1961
How To Adjust Corn Planter .....April 1961
Figure Costs Before Buying .....May 1961
Moldboard Plow or Rotary Tiller ..Oct. 1961
Tractor Talk .....Oct. 1961

ONE YEAR CONTINUING INDEX

FEEDS

Future for Medicated Feeds .....Dec. 1960
How To Use Stilbestrol.....Feb. 1961
Pelleting Feeds for Cattle .....April 1961
How To Use Moldy Corn .....April 1961
High Moisture Corn for Hogs ....April 1961
What Is Forage Quality? .....July 1961
Tempting Bossy's Palate .....July 1961
Feed Grain Instead of Hay? .....Sept. 1961
Truth About Urea .....Sept. 1961
Some Pelleting Cuts Costs .....Oct. 1961

FERTILIZERS

Nitrogen, Continuous Corn .....Jan. 1961
Time To Lime .....Sept. 1961
How To Buy Fertilizer .....Oct. 1961
Fertilizer, Profit Substitute .....Oct. 1961
What's Manure Really Worth? ....Oct. 1961

HAY AND HAY CROPS

Birdsfoot Trefoil Looks Good.....Feb. 1961
How Effective Hay Conditioners? March 1961
Fertilize and Profit .....March 1961
Red Clover, Old Reliable .....May 1961
Don't Wait To Put Up Hay .....May 1961

HOGS

Planned Parenthood .....Dec. 1960
Hog Cholera .....Dec. 1960
Forward Look Swine Industry .....Jan. 1961
Don't Share Hog Profits .....Jan 1961
Lean Hogs, Fiber Rations.....Feb. 1961
Performance Testing to Improve Hogs Feb. 1961
Make Extra $5 Per Hog.....Feb. 1961
Shrinkage In Marketing Hogs ....March 1961
Which Hog Ration? .....March 1961
Use Backfat Probing .....March 1961
When Should You Worm Pigs? ....March 1961
Hog Feeds Supply Hog Needs ....May 1961
Hogs In North Ireland .....May 1961
Raise Hogs In Steam .....July 1961
200 Lb. Hogs In 5 Months .....July 1961
New Hog Cost Study .....July 1961
How To Grade Hogs .....Sept. 1961
Pigs On Mesh Floors .....Sept. 1961
Feeder Pigs, Buy Right .....Sept. 1961
How To Start SPF Pigs .....Oct. 1961
Pasture In Hog Production .....Oct. 1961

INSECTS AND INSECTICIDES

Insects and Man .....March 1961
Why Use Soil Insecticides? .....April 1961
Fantastic Pest Controls .....May 1961
Rules for Insecticide Safety .....May 1961
New Face Fly Control .....July 1961

PASTURES

High Nitrogen Grass.....Feb. 1961
Road To Greener Pastures .....March 1961
Pasture Young Dairy Calves? ....May 1961
How To Manage Grass Pasture ...May 1961
Are Pastures Out of Date? .....May 1961
Don't Let Cows Out Too Soon ....May 1961
Should You Chop Twice Daily .....July 1961

POULTRY

Antibiotics for Poultry .....Dec. 1960
Full Performance from Layers .....Jan. 1961
When Chicken Lays Egg .....Sept. 1961

SHEEP AND GOATS

How To Help Ewe in Difficulty ....Dec. 1960
Future for Sheep, Wool .....Jan. 1961
Attention At Lambing Time .....March 1961
Sound Nutrition, Better Wool .....April 1961
Beating Summer Sterility in Sheep .May 1961
Breeding Ram, Treat Well .....July 1961
Breed Sheep for Productivity .....Sept. 1961
Started Lambs .....Oct. 1961

SILAGE

Silage In Dairy Feeding .....April 1961
Test Moisture In Silage .....April 1961
How Good Is Your Silage? .....May 1961
Make High Quality Grass Silage ..July 1961
Why Corn Silage? .....Sept. 1961
13,500 lbs. Milk on Silage .....Sept. 1961
Silo Covers Save Feed .....Sept. 1961
Silage Fumes Dangerous .....Sept. 1961

SOILS

He Saves The Soil .....Dec. 1960
Humus .....Dec. 1960
Farming Without Soil .....Jan. 1961
Better Farm Drainage Needed .....Jan. 1961
Challenging Question About Soil ...Jan. 1961
Feed For Cow & Soil .....March 1961
Ways To Check Livestock Losses ..March 1961
Miracle Substance In Soil .....May 1961
Soil Organisms Influence Yields ...Sept. 1961
Case for Chisel Plow .....Sept. 1961
Compaction, Growing Problem ....Oct. 1961

VETERINARY

Catarrhal Fever Cause Trouble .....Dec. 1960
Rhinotracheitis Hardest in Winter ..Dec. 1960
Guard Against Rabies .....Dec. 1960
Water Belly, Steer Killer .....Dec. 1960
Beware Livestock Poisons .....Dec. 1960
Animal Diseases You Can Catch ....Dec. 1960
How To Handle The "Downer" ....Dec. 1960
Future for Medicated Feeds .....Dec. 1960
Hog Cholera .....Dec. 1960
Caring for Sick Cow .....Dec. 1960
Crooked Calf Disease .....Dec. 1960
Tranquilizers Helpful Tool .....Dec. 1960
Good Calving Practices.....Feb. 1961
Ways To Check Livestock Losses ..March 1961
Is This Feed Safe, Boss? .....March 1961
Watch Out For Photosensitization ..May 1961
Watch for Nitrate Poisoning .....July 1961
New Face Fly Control .....July 1961
Factors Causing Bloat .....July 1961
What Doing About Fescue Foot? ..Sept. 1961
Get Cows In Calf .....Oct. 1961

WEEDS

Quackgrass Control .....March 1961

MISCELLANEOUS

Use Chemicals Safely .....Dec. 1960
Pigeons Fun, Make Meat, Too .....Jan. 1961
They Raise A Smell.....Feb. 1961
Catfish Farming .....April 1961
My Life With Jack .....May 1961
Old Time Western Ring Toter .....May 1961
Passing of Passenger Pigeon .....July 1961
Biggest Farm Fish Story .....Sept. 1961
How Accurate Almanac Weather ..Sept. 1961
Not Much Land for Goats .....Sept. 1961
Manage Bees For Profit .....Oct. 1961

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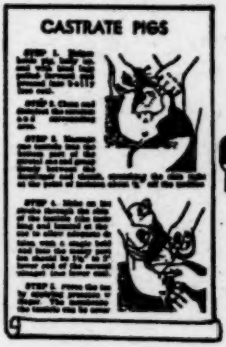

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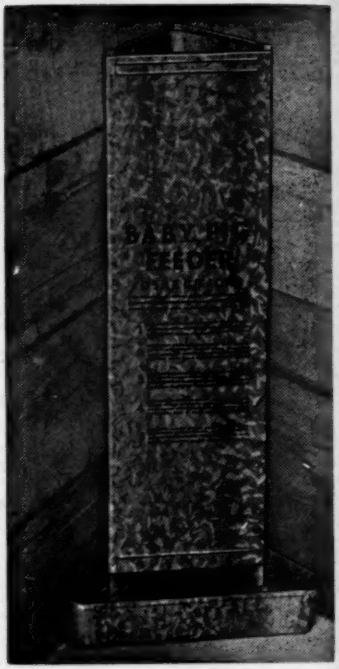

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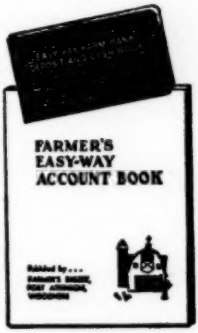

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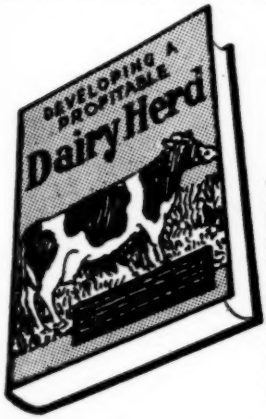

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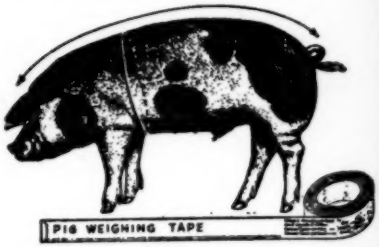

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